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SEQUENCE LISTING

<110> McGill University
Rouleau, Guy A.
Lafrenière, Ronald G.
Cossette, Patrick
Ragsdale, David

<120> LOCI FOR IDIOPATHIC GENERALIZED EPILEPSY, MUTATIONS
THEREOF AND METHOD USING SAME TO ASSESS, DIAGNOSE,
PROGNOSE OR TREAT EPILEPSY

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<151> 2000-11-24

<140> PCT/CA00/01404

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<140? 60/167,623

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985

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1895

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aacaattgca actgaaggca cattgttatc atctcgtctt tgggtgatgc tgttcctcac 540
tgcagatgga taattttcct tttaatcagg taagccatct aattgtttca tcttgatttt 600
aagtttattc attccagtta ttcctttgga aaaagagtcc atggaaattc agtttgggca 660
gagcaggaag tccatttttg tatgtgtatt cagaccaact gtccccctcc tccctctcct 720
cctcttcttg tccccctccc cgcgcctccc tctctcaacc ttccatgaac tgaaatcagg 780
tttgttttgc agttcagcat tttgatagaa gatgggattc tttggcctga aatagcttgg 840
catctggcca 850

<210> 6
<211> 483
<212> DNA
<213> Homo sapiens

<400> 6
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caggacctga cagcttcaac ttcttcacca gagaatctct tgcggctatt gaaagacgca 180
ttgcagaaga aaaggcaaag aatcccaaac cagacaaaaa aagatgacga cgaaaaatgg 240
cccaagcaa atagtgaact ggaagctgga aagaaccttc catttattta tggagacatt 300
cctccagaga tgggtgtcaga gccctggag gacctggacc cctactatat caataagaaa 360
gtgagtgttt tttttatcag gcatattttt gctgctaatt gcctactgca ttccttggac 420
tgttgtagca ccaacacatg ccaatagcac aaatctagta tctctgttag aatgaacaca 480
ttt 483

<210> 7
<211> 497
<212> DNA
<213> Homo sapiens

<400> 7
taagaagaga tccagtgaca gtttgttttc atggggcact ttaggaaatt gtgattgtgc 60
tggtttctca ttttaacttta caataattta ttatgacaag taacagaaag tagataacag 120
agtttaagt gtttatactt tcatacttct atgttgtgtt cctgtcttac agacttttat 180
agtattgaat aaagggaagg ccatcttccg gttcagtgcc acctctgcc tgtacatttt 240
aactcccttc aatcctctta ggaaaatagc tattaagatt ttggtacatt catatccttt 300
ttcaagtgat taatattaac ttttgtaca tgatctgtaa gcactttata gctaaatatc 360
aaattaagtt gggaaatgtc catattatat aggtttcatc actctcattt tgcattcttg 420
tcatattagc ctcatcttta aagttcatta atcacataga cattactgaa acatgtactc 480
tttaacattt tatatat 497

<210> 8
<211> 501
<212> DNA
<213> Homo sapiens

<400> 8
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cattttacac atgaagaaat tgaaatgtaa ggagattaga agacttgccc acaatgcatt 120
tatccctgaa ttttggctaa gctgcagttt gggcttttca atgttagctt tttgtaatat 180
aacacttgga ttttgatttt cttttgtgtg ttccttaaca ataacctaca ttattcagca 240
tgctaattat gtgcactatt ttgacaaact gtgtgtttat gacaatgagt aaccctcctg 300
attggacaaa gaatgtagag taagttcaac ttatatTTTT aataacatat atacattygg 360
gattytgaaa ctgtgtctta atgtagtctt aaaataaaaac tgaagagcat tttattaaag 420
tcattcctag acaaaaattac gcagcaagag gacaatgctc attggccctc aggctgctg 480
gcgttatact gattatcact c 501

<210> 9
<211> 563
<212> DNA
<213> Homo sapiens

<400> 9
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aactctttgt gtttaggaagc tgaattttaa tttagggtca cgtttcattt gtatgaaatt 120
aaaatccatc tgcttagttt tcttttttag tatttatcta ttccactgat ggagtataaa 180
gaaattggta tgctatgaaa aaacactgtt actttatcaa attttttgga tgcttgtttt 240
cagatacacc ttcacaggaa tatatacttt tgaatcactt ataaaaatta ttgcaagggg 300
attctgttta gaagatttta ctttccttcg ggatccatgg aactggctcg atttactgt 360
cattacattt gcgtaagtgc ctttbytgaa actttaagag agaacatagt ttggttttcc 420
atcagtgcct atgcttttaa gaataggttt gctttacctg tagaatattt ttgtgtgatt 480
tatacattca aactctggat ttcaatttag cacaacaaag gtctaagtgg aatttcacta 540
tagcatgaag gctttgcagt agt 563

<210> 10
<211> 253
<212> DNA
<213> Homo sapiens

<400> 10
cttataagcc catgcagtaa tataaatcct gctaaaatct tgaataattc tgatttaatt 60
ctacagggtt gtaacagaat ttgtaaacct aggcaatttt tcagctcttc gcactttcag 120
agtcttgaga gctttgaaaa ctatttcggg aattccaggt aagaagtgat tagagtaaag 180
gataggctct ttgtacctac agctttttct ttgtgtcctg tttttgtgtt tgtgtgtgaa 240
ctcccgcctta cag 253

<210> 11
<211> 340
<212> DNA
<213> Homo sapiens

<400> 11
gtaagaagtg attagagtaa aggataggct ctttgtacct acagcttttt ctttgtgtcc 60
tgtttttgtg tttgtgtgtg aactcccgtc tacagggtacg tcacagagtt tgtggacctg 120
ggcaatgtct cggcattgag aacattcaga gttctccgag cattgaagac gatttcagtc 180
attccagggt agagcaagg tagataatga gacggaccca tcatgtgatt cagcatcctt 240
ctctgcttga cattcagttt tacagaaaat caggaatcat aagactaggt gttcaaagaa 300
atgattatta tgtagacat agcttatcag cctggagtta 340

<210> 12
<211> 409
<212> DNA
<213> Homo sapiens

<400> 12
cacgcgtgct tagccctcat agtaatagcc tectaccttc aggcctgaaa accattgtgg 60
gagccctgat ccagtctgtg aagaagctct cagatgtaat gatcctgact gtgttctgtc 120
tgagcgtatt tgctctaatt gggctgcagc tgttcatggg caacctgagg aataaatgta 180
tacaatggcc tcccaccaat gcttccttgg aggaacatag tatagaaaag aatataactg 240
tgaattataa tggtaacctt ataaatgaaa ctgtctttga gtttgactgg aagtcataata 300
ttcaagattc aagtaagaat tattgttatg tacatttcct taaaaagtag aattggattg 360
tttctaacac aaaggataaa tacttgaggg gctggatatc ccattttac 409

<210> 13
<211> 266
<212> DNA
<213> Homo sapiens

<400> 13
cgcgcaataa cttgtgcctt tgaatgaata atatatttaa aattactcaa taaacttaaa 60
agtagaacct gaccttcctg ttctctttga gtgtttttta caatgcaaat gttcagcata 120
cgactttctt ttttcaaaca ggatattcatt atttcctgga gggtttttta gatgcactac 180
tatgtggaaa tagctctgat gcagggtgaa tcaatattgt gtgcatctgt gtatattgta 240
tgtacacaat acatatgtgt atcttt 266

<210> 14
<211> 604
<212> DNA
<213> Homo sapiens

<400> 14
agggtgtgaa aatgcaaatt atcaacaaaa attattttgt aaaatattat tagaaatgct 60
gcaccatatt ttaatgatga caccaagtag ctaataagac tatatgcagt caaaagttgg 120
gaaatagatt agttacttat ttgtcaaaact tttattttga aataccaaat ctttctgact 180
aggcaatatc atagcatagt atcagagtaa aaaggcagca gaacgacttg taatactttc 240
ttttacccca cttgcagcca atgtccagag ggatatatgt gtgtgacagc tggtagaaat 300
cccaattatg gctacacaag ctttgatacc ttcagttggg cttttttgtc cttgtttcga 360
ctaagtactc aggacttctg ggaaaatctt tatcaactgg tgagaactaa agagccacac 420
tctccattta agtaaaaagta tacaagaaaa ccaattgagt tatgaaatta aaaccggatg 480
ataatatagt agaaagagca gaacttgaca cgagacttga gttcctctat cctattgatt 540
ataacacata ctgagcagag tgatgccaaag gattgcaatt ctctccatt tcttcttggc 600
tcaa 604

<210> 15
<211> 378
<212> DNA
<213> Homo sapiens

<400> 15
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atattgggaa ataattctga tttttttgtt tgcagacatt acgtgctgct gggaaaacgt 120
acatgatatt ttttgtattg gtcattttct tgggctcatt ctacctaata aatttgatcc 180


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tggctgtggt ggccatggcc tacgaggaac agaatcaggc caccttggaa gaagcagaac 240
agaaaagaggc cgaatttcag cagatgattg aacagcttaa aaagcaacag gaggcagctc 300
aggtaagctg ccctgctcat ggcactgacc tttatcgtct gatgtactat atgagagaag 360
tagtctagag cgtgtgat                                     378

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<210> 16
 <211> 845
 <212> DNA
 <213> Homo sapiens

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<400> 16
caaccctaata taaataccaa tttttaaagt aaatcaaata ccaaaaagta atgaatttat 60
tttcttggtg atacatgttg gatatttttg aatacgtggt ctgtggagca ttaacagaga 120
cataataaat gttaccatgg agcaaaactaa attatctcca aaagccttca ttaggtagaa 180
agaaaaaaata aatctcctct tatacttgca gagaatcttc tctgtgagat gatcttcagt 240
cagttcaata tattttttta aagccatgca aatacttcag ccctttcaaa gaaagataca 300
gtctcttcag gtgctatggt aaaatcattt ctcttcaata tagcaggcag caacggcaac 360
tgcctcagaa cattccagag agcccagtg agcaggcagg ctctcagaca gctcatctga 420
agcctctaag ttgagttcca agagtgtctaa ggaaagaaga aatcggagga agaaaagaaa 480
acagaaagag cagtctgggt ggaagagaaa agatgaggat gaattccaaa aatctgaatc 540
tgaggacagc atcaggaggw aagggttttcg cttctccatt gaaggggaacc ggttgacata 600
tgaaaagagg tactcctccc cacaccaggt atggcactgc tgagtttact gatgcatggt 660
tgaaaattaa aacatgggag agagggggag atttagaaaa tggactcagg aatttttatc 720
aactgaatca accactgttg tggtatattt aaacccatcc cttcttcaca tagttatgca 780
aaaactttac tccacagata tgtaagtcta cagctcgggt tagttaagat aacaccaagt 840
tgaca                                             845

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<210> 17
 <211> 965
 <212> DNA
 <213> Homo sapiens

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<400> 17
cattgccata ttctaaggat gtttcccttt gaacttgaga aatggtcggt caggggtgtgt 60
gtgtatgtgt gtgtgtgtgt gtttcaatat gttaagggtg caatctatct cctcattctt 120
taatcccaag ggctagaaac tttcttttat caaggtaatt taatttaatg tgaatgcaca 180
taaaatgaga atgataatca aaaggaatga accatattct gttatgaatg ctgaaatctc 240
cttctacata atcttgcaaa atgaaatcac attcaaagt ccatattaat atgactctat 300
ttgtbtgctc tttcaaaact ctagtctttg ttgagcatcc gtggctccct attttcacca 360
aggcgaaata gcagaacaag ccttttcagc ttttagaggg gagcaaagga tgtgggatct 420
gagaacgact tcgcagatga tgagcacagc acctttgagg ataacgagag ccgtagagat 480
tccttgtttg tgccccgacg acacggagag agacgcaaca gcaacctgag tcagaccagt 540
aggtcatccc ggtgctggc agtggtttcca gcgaatggga agatgcacag cactgtggat 600
tgcaatgggtg tgggttcctt ggttggtgga ccttcagttc ctacatcgcc tgttgacag 660
cttctgccag aggtgataat agataagcca gctactgatg acaatgtaag gaagtyttaa 720
atagttcagg catggctggc tcaactattgc tgcaccagcc agtgtgtcta cagaacggca 780
accttgagaa tgattcctgg ttggtcacgc tgtgaatgca cctgcatctt gtaatatctt 840
tgatagacta accaactaaa acttaaaacc ttagcagtcg cctgcacaaa cctgaatgca 900
tttacttatt aaaagtgtcta aggattgatt agacacaata attactgcct ccagttggag 960
gattt                                             965

```

<210> 18
 <211> 641
 <212> DNA

<213> Homo sapiens

<400> 18

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aagagtttta tcaactatat taaaattatt ttgtatttta taaaattatg aaatcaggaa 60
gttaacatct tggtttttgc tgtatgacta aatggttaac agtttgaaca ttccaggcta 120
atgatacaat aagtcagaaa tatctgccat caccaattga atatgaaagt gcatgatgca 180
tgtgtttcat gaaattcact gtgtcaccat ttggttgttt gcttgtcata ttgtctcaaat 240
taattgttta atgcattagc attttttttt acagggaaca accactgaaa ctgaaatgag 300
aaagagaagg tcaagtctct tccacgtttc catggacttt ctagaagatc cttcccaaag 360
gcaacgagca atgagtatag ccagcattct aacaaataga gtagaagggt ggtaacaaat 420
tctattttcg tttcaattat tttcaccaaa cttatattgt ctcatctcaa acaaatatat 480
ttgtgagttg ggaatagtgc attctaataa aaagacagtc taattcaaga gctgttattt 540
cttatatcta ctcagatatt ctagaagcct taacaattta ttttaaaatg agtgatattg 600
ggactaagac tgttttccta actgtgtagc aactctttga a 641
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<210> 19

<211> 818

<212> DNA

<213> Homo sapiens

<400> 19

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gtgaggcggc acatgaaaga ccacccattt aacctgaggc caagtgctga gccacaatgg 60
cagtgcataa gacaaaaaac taccatttgt tacctgggcc ctatgtgtgt gtctgatgaa 120
ataaccttgg gaggttttaga gtaaaactgta atttttttta caagtacaaa aaagggtgtc 180
tctgtaacaa aaatgtgttg attactgaaa ataagttag tggatatgaa ataaatgtgt 240
gtgtataaag tawacctttt ggtgggtctt tttttttttt ttcttaatct agaactgaa 300
gaatccaggc agaaatgccc accctgttgg tataaatatt ccaacatatt cttaatctgg 360
gactgttctc catattgggt aaaagtgaac catgttgtca acctgggtgt gatggacca 420
tttgttgacc tggccatcac catctgtatt gtcttaata ctcttttcat ggccatggag 480
cactatccaa tgacggacca tttcaataat gtgcttacag taggaaactt ggtaagcata 540
ttggaaggta aatgtgttta gtcttcaaatt tttctgcttg aaaaactgtt tacatttaat 600
tgtgtatagc agtctttcaa ccctccttca tgcttctctg cccctgcaaa atcgcaatta 660
tatttagctg gctatactct acttttttgc caaaaataat cacccttaat gtgctcacia 720
aaactgagaa aggcataaggc ctacagcact acttgaaaag tcaacagcaa tatttataat 780
ttttcaggat ccagaagtag ctcataagatt aagaacat 818
```

<210> 20

<211> 645

<212> DNA

<213> Homo sapiens

<400> 20

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caagccattt cacccatctg aagacctcag tttccttatt tgtaaagtaa taattgtata 60
ttatctactt cgcgtttcca caaggataaa attaaataat gtatatgawa gtctttcatc 120
aactacaaat tgccatacaa atttaagtta gtaatagaat cattgtggga aaatagcata 180
agcattatgt tctaagagca aatcttatgt catgtatgtt attatctggg ggaattagat 240
taattttgtt ttgatcttag gttttcactg ggatctttac agcagaaatg tttctgaaaa 300
ttattgccat ggatccttac tattatttcc aagaaggctg gaatatcttt gacggtttta 360
ttgtgacgct tagcctggta gaacttggac tcgccaatgt ggaagggtta tctgttctcc 420
gttcattttc atttggtaaaa aaaaaaaaaa aaggaacca attcaaaaac ctttctaaca 480
ttcagggttc ttgcatagca ttgtcatagt ttttttgcca cacaaccatt aggcattgta 540
agtttttctg taacatttgc attgtcaaaa acttttccta catgggaata attctcaatt 600
attaggttac cttagttcaa gggcwaggtc ggaaggtaa cggtt 645
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<210> 21
<211> 829
<212> DNA
<213> Homo sapiens

<400> 21
gaattctaata gaccatttct aggtaaagct caatatatat aatgctttta agaatcatat 60
aaatatatat taatctttca ttttccagct gcgagatttc aagttggcaa aatcttggcc 120
aacgttaaat atgctaataa agatcatcgg caattccgtg ggggctctgg gaaatttaac 180
cctcgtcttg gccatcatcg tcttcatttt tgccgtgggc ggcattgcagc tctttggtaa 240
aagctacaaa gattgtgtct gcaagatcgc cagtgtattgt caactccac gctggcacat 300
gaatgacttc ttccactcck hcctgattgt gttccgcgtg ctgtgtgggg agtggataga 360
gaccatgtgg gactgtatgg aggttgctgg tcaagccatg tgccttactg tcttcatgat 420
ggatcatggg attggaaacc tagcgggatg taccactta agatatgcat tttggaaata 480
caccagcatg gcacatgtat acatatgtaa ctaacctgca cattgtgcac atgtacccta 540
aaacttaaaag tataataaaa aaaaagagta taatttaatg gtgactgttt tgtcaaaaag 600
aaaaacaaac tatgattatt ggtttaaaag tccattacct tggatatatt atcactttta 660
caacacagca atatabcagt gccctgcac tttttatacc aaattctatt ttgtcagtca 720
ctttatcaca ttttttatgt gaattacaat agagtatcat attgagatga gcctaaaagg 780
atgtgctggg accattttat aaattcagag ccaaggaaga gagaagtct 829

<210> 22
<211> 909
<212> DNA
<213> Homo sapiens

<400> 22
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acaaaacctt agattagctc attcaatttc actttacgaa tgggagaact tgagagcaac 120
agaaatcatg tctttgtcca aggatgtgct attgagccag tcacaaattc agatcaccca 180
tcttctaact actatgctgt ggtgtttcct tctcatcaag ttttagaact tagagttttt 240
tccacactta aaagaaagaa taagtgtatt taatctgctc ttccctacat tgggtgtaaaa 300
ttataatcat gtttttggtg tttttaaggt cctgaatctc tttctggcct tgcttctgag 360
ctcatttagt gcagacaacc ttgcagccac tgatgatgat aatgaaatga ataactctca 420
aattgctgtg gataggatgc acaaaggagt agcttatgtg aaaagaaaaa tatatgartt 480
tattcaacag tccttcatta ggaaacaaaa gatttttagat gaaattaaac cacttgatga 540
tctaaacaac aagaaagaca gttgtatgtc caatcataca gcagaaattg ggaaagatct 600
tgactatcct aaagatgtaa atggaactac aagtgggtata ggaactggca gcagtgttga 660
aaaatacatt attgatgaaa gtgattacat gtcattcata acaacccca gtcttactgt 720
gactgtacca attgctgtag gagaatctga ctttgaaaat ttaaacacgg aagacttttag 780
tagtgaatcg gatctggaag aaagcaaaga ggtaagattc tataggtgtg ggtaggtatg 840
aatacatata catatatata tatacacaca tacagatgay cctcagctta atgatgtttt 900
tacttaaga 909

<210> 23
<211> 516
<212> DNA
<213> Homo sapiens

<400> 23
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ccccttattc aatctctctt tttctctaaa aatatctcta cctcaagaag aataaaaaac 120
aaattcatag taataatcct tcttggcagg caacttatta ccaaaattaa ggactttact 180
ttctatgtcc atctcactta cagaaactga atgaaagcag tagctcatca gaaggtagca 240
ctgtggacat cggcgcacct gtagaagaac agcccgtagt ggaacctgaa gaaactcttg 300

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aacccgaagc ttgtttcact gaaggtaaag aaaagaatcc taatgttaat ctttcatttg 360
gagtgcagct tatttagctg ttggtcagct aanataaatc acatataata aaatngcact 420
ttgtaataga tataattcaa tcacctctaa tatnttgaca gacaaaaaaa cttaaagtct 480
agtgatcatgc tttgattata tctgccaat atntgg 516

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<210> 24
 <211> 640
 <212> DNA
 <213> Homo sapiens

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<400> 24
ccatttaa at gtggctgaat gtttccacaa cttcacacag ctgatgaatg tgctcttact 60
actctaggct tagagagcta tgctagcaag acagagatga gcatagtaat aaaaagacaa 120
gacaaggaca ttgctaaagg atattatgga agcagagaca ctttatctac ttttatttca 180
acactttctg caggctgtgt acaaagattc aagtgttgtc aaatcaatgt ggaagaaggc 240
agaggaaaac aatggtggaa cctgagaagg acgtgtttcc gaatagttga acataactgg 300
tttgagacct tcattgtttt catgattctc cttagtagtg gtgctctggg gagtgagatt 360
aagaaaagggt gatacagcac taatttttag aacactctaa tactgatgac ttattaatcc 420
tttgtttcat tgtcttagta tccaatgcat ttttaattat cccacctgt atcttctata 480
gatttactct ataactctat atttctggat taacttttac tatgtatgta aatataattt 540
taagaagcta atcattaatt tttgcttact attaaatagc ccagaaagtg tagcccttca 600
gcttattcat taacaccaaa ggatgtgaat attcaattac 640

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<210> 25
 <211> 607
 <212> DNA
 <213> Homo sapiens

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<400> 25
ccacatcagg atacaacatc aagaactatt tcttgactaa gtcaaattaa ttcattggaa 60
tcatactttt ctttttcttc caccaatagt ctttcccctg attaaataag taaaagacct 120
ttgcgaggaa aaaaaaaaaa taacagtaac tactgtttct ctgccctcct attccaatga 180
aatgtcatat gcatatgatt aattttttta atagcttatg gagtataatt atttttgaaa 240
gctaataatg tgtaacattt tctttatagg catttgaaga tatatatatt gaycagcgaa 300
agacgattaa gacgatgttg gaatatgctg acaaggtttt cacttacatt ttcattctgg 360
aaatgcttct aaaatgggtg gcatatggct atcaaacata tttcaccaat gcctggagtt 420
ggctggactt cttaattggt gatgtaggta tcgttcatat ttttgtctct gttcaaggta 480
gcttgtctta tttatattca aattctacaa tagtgagtct cagaccacta tgttatgttg 540
acagactata atarccacta aacgcatata tgcaatgaga gtgtcatttc tggagacaaa 600
gggctaa 607

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<210> 26
 <211> 336
 <212> DNA
 <213> Homo sapiens

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<400> 26
aaaaattata cttgtcgtat tatatagcaa ctacacattg aatgatgatt ctgtttatta 60
attgttatta ttcygtgtg tgcaggtttc attggtcagt ttaacagcaa atgccttggg 120
ttactcagaa cttggagcct atcaatctct caggacacta agagctctga gacctctaag 180
agccttatct cgatttgaag ggatgagggg aagaaaaatg aaagaacctg aagtattgta 240
tatagccaaa attaaactaa attaaattta gaaaaaagga aaaatgtatg catgcaaaa 300
gaatggcaaa ttcttgcaaa atgctcttta ttgttt 336

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<210> 27
<211> 677
<212> DNA
<213> Homo sapiens

<400> 27
cttggttata ttgcctatag ttgttttcct aagtgtattg ctttaagaaaa aaaaatgaat 60
tttaagattt ttttgaacct tgctttttaca tatcctagaa taaatagcat tgatagaaaa 120
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 Ile Phe Thr Ala Glu Met Phe Leu Lys Ile Ile Ala Met Asp Pro Tyr
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 Tyr Tyr Phe Gln Glu Gly Trp Asn Ile Phe Asp Gly Phe Ile Val Ser
 820 825 830
 Leu Ser Leu Met Glu Leu Gly Leu Ala Asn Val Glu Gly Leu Ser Val
 835 840 845
 Leu Arg Ser Phe Arg Leu Leu Arg Val Phe Lys Leu Ala Lys Ser Trp
 850 855 860
 Pro Thr Leu Asn Met Leu Ile Lys Ile Ile Gly Asn Ser Val Gly Ala
 865 870 875 880
 Leu Gly Asn Leu Thr Leu Val Leu Ala Ile Ile Val Phe Ile Phe Ala
 885 890 895
 Val Val Gly Met Gln Leu Phe Gly Lys Ser Tyr Lys Glu Cys Val Cys
 900 905 910
 Lys Ile Ser Asn Asp Cys Glu Leu Pro Arg Trp His Met His Asp Phe
 915 920 925
 Phe His Ser Phe Leu Ile Val Phe Arg Val Leu Cys Gly Glu Trp Ile
 930 935 940

Glu Thr Met Trp Asp Cys Met Glu Val Ala Gly Gln Thr Met Cys Leu
 945 950 955 960
 Thr Val Phe Met Met Val Met Val Ile Gly Asn Leu Val Val Leu Asn
 965 970 975
 Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ser Asp Asn Leu Ala
 980 985 990
 Ala Thr Asp Asp Asp Asn Glu Met Asn Asn Leu Gln Ile Ala Val Gly
 995 1000 1005
 Arg Met Gln Lys Gly Ile Asp Phe Val Lys Arg Lys Ile Arg Glu Phe
 1010 1015 1020
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 Pro Leu Glu Asp Leu Asn Asn Lys Lys Asp Ser Cys Ile Ser Asn His
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 Thr Thr Ile Glu Ile Gly Lys Asp Leu Asn Tyr Leu Lys Asp Gly Asn
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 Gly Thr Thr Ser Gly Ile Gly Ser Ser Val Glu Lys Tyr Val Val Asp
 1075 1080 1085
 Glu Ser Asp Tyr Met Ser Phe Ile Asn Asn Pro Ser Leu Thr Val Thr
 1090 1095 1100
 Val Pro Ile Ala Val Gly Glu Ser Asp Phe Glu Asn Leu Asn Thr Glu
 1105 1110 1115 1120
 Glu Phe Ser Ser Glu Ser Asp Met Glu Glu Ser Lys Glu Lys Leu Asn
 1125 1130 1135
 Ala Thr Ser Ser Ser Glu Gly Ser Thr Val Asp Ile Gly Ala Pro Ala
 1140 1145 1150
 Glu Gly Glu Gln Pro Glu Val Glu Pro Glu Glu Ser Leu Glu Pro Glu
 1155 1160 1165
 Ala Cys Phe Thr Glu Asp Cys Val Arg Lys Phe Lys Cys Cys Gln Ile
 1170 1175 1180
 Ser Ile Glu Glu Gly Lys Gly Lys Leu Trp Trp Asn Leu Arg Lys Thr
 1185 1190 1195 1200
 Cys Tyr Lys Ile Val Glu His Asn Trp Phe Glu Thr Phe Ile Val Phe
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 Met Ile Leu Leu Ser Ser Gly Ala Leu Ala Phe Glu Asp Ile Tyr Ile
 1220 1225 1230
 Glu Gln Arg Lys Thr Ile Lys Thr Met Leu Glu Tyr Ala Asp Lys Val
 1235 1240 1245

Phe Thr Tyr Ile Phe Ile Leu Glu Met Leu Leu Lys Trp Val Ala Tyr
1250 1255 1260

Gly Phe Gln Val Tyr Phe Thr Asn Ala Trp Cys Trp Leu Asp Phe Leu
1265 1270 1275 1280

Ile Val Asp Val Ser Leu Val Ser Leu Thr Ala Asn Ala Leu Gly Tyr
1285 1290 1295

Ser Glu Leu Gly Ala Ile Lys Ser Leu Arg Thr Leu Arg Ala Leu Arg
1300 1305 1310

Pro Leu Arg Ala Leu Ser Arg Phe Glu Gly Met Arg Ala Val Val Asn
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Ala Leu Leu Gly Ala Ile Pro Ser Ile Met Asn Val Leu Leu Val Cys
1330 1335 1340

Leu Ile Phe Trp Leu Ile Phe Ser Ile Met Gly Val Asn Leu Phe Ala
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Gly Lys Phe Tyr His Cys Ile Asn Tyr Thr Thr Gly Glu Met Phe Asp
1365 1370 1375

Val Ser Val Val Asn Asn Tyr Ser Glu Cys Lys Ala Leu Ile Glu Ser
1380 1385 1390

Asn Gln Thr Ala Arg Trp Lys Asn Val Lys Val Asn Phe Asp Asn Val
1395 1400 1405

Gly Leu Gly Tyr Leu Ser Leu Leu Gln Val Ala Thr Phe Lys Gly Trp
1410 1415 1420

Met Asp Ile Met Tyr Ala Ala Val Asp Ser Arg Asn Val Glu Leu Gln
1425 1430 1435 1440

Pro Lys Tyr Glu Asp Asn Leu Tyr Met Tyr Leu Tyr Phe Val Ile Phe
1445 1450 1455

Ile Ile Phe Gly Ser Phe Phe Thr Leu Asn Leu Phe Ile Gly Val Ile
1460 1465 1470

Ile Asp Asn Phe Asn Gln Gln Lys Lys Lys Phe Gly Gly Gln Asp Ile
1475 1480 1485

Phe Met Thr Glu Glu Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu
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Gly Ser Lys Lys Pro Gln Lys Pro Ile Pro Arg Pro Ala Asn Lys Phe
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Gln Gly Met Val Phe Asp Phe Val Thr Lys Gln Val Phe Asp Ile Ser
1525 1530 1535

Ile Met Ile Leu Ile Cys Leu Asn Met Val Thr Met Met Val Glu Thr
1540 1545 1550

Asp Asp Gln Ser Gln Glu Met Thr Asn Ile Leu Tyr Trp Ile Asn Leu
 1555 1560 1565

Val Phe Ile Val Leu Phe Thr Gly Glu Cys Val Leu Lys Leu Ile Ser
 1570 1575 1580

Leu Arg Tyr Tyr Tyr Phe Thr Ile Gly Trp Asn Ile Phe Asp Phe Val
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Val Val Ile Leu Ser Ile Val Gly Met Phe Leu Ala Glu Leu Ile Glu
 1605 1610 1615

Lys Tyr Phe Val Ser Pro Thr Leu Phe Arg Val Ile Arg Leu Ala Arg
 1620 1625 1630

Ile Gly Arg Ile Leu Arg Leu Ile Lys Gly Ala Lys Gly Ile Arg Thr
 1635 1640 1645

Leu Leu Phe Ala Leu Met Met Ser Leu Pro Ala Leu Phe Asn Ile Gly
 1650 1655 1660

Leu Leu Leu Phe Leu Val Met Phe Ile Tyr Ala Ile Phe Gly Met Ser
 1665 1670 1675 1680

Asn Phe Ala Tyr Val Lys Arg Glu Val Gly Ile Asp Asp Met Phe Asn
 1685 1690 1695

Phe Glu Thr Phe Gly Asn Ser Met Ile Cys Leu Phe Gln Ile Thr Thr
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Ser Ala Gly Trp Asp Gly Leu Leu Ala Pro Ile Leu Asn Ser Gly Pro
 1715 1720 1725

Pro Asp Cys Asp Pro Asp Lys Asp His Pro Gly Ser Ser Val Lys Gly
 1730 1735 1740

Asp Cys Gly Asn Pro Ser Val Gly Ile Phe Phe Phe Val Ser Tyr Ile
 1745 1750 1755 1760

Ile Ile Ser Phe Leu Val Val Val Asn Met Tyr Ile Ala Val Ile Leu
 1765 1770 1775

Glu Asn Phe Ser Val Ala Thr Glu Glu Ser Ala Glu Pro Leu Ser Glu
 1780 1785 1790

Asp Asp Phe Glu Met Phe Tyr Glu Val Trp Glu Lys Phe Asp Pro Asp
 1795 1800 1805

Ala Thr Gln Phe Ile Glu Phe Ala Lys Leu Ser Asp Phe Ala Asp Ala
 1810 1815 1820

Leu Asp Pro Pro Leu Leu Ile Ala Lys Pro Asn Lys Val Gln Leu Ile
 1825 1830 1835 1840

Ala Met Asp Leu Pro Met Val Ser Gly Asp Arg Ile His Cys Leu Asp
 1845 1850 1855

Ile Leu Phe Ala Phe Thr Lys Arg Val Leu Gly Glu Ser Gly Glu Met
1860 1865 1870

Asp Ala Leu Arg Ile Gln Met Glu Glu Arg Phe Met Ala Ser Asn Pro
1875 1880 1885

Ser Lys Val Ser Tyr Glu Pro Ile Thr Thr Thr Leu Lys Arg Lys Gln
1890 1895 1900

Glu Glu Val Ser Ala Ile Ile Ile Gln Arg Ala Tyr Arg Arg Tyr Leu
1905 1910 1915 1920

Leu Lys Gln Lys Val Lys Lys Val Ser Ser Ile Tyr Lys Lys Asp Lys
1925 1930 1935

Gly Lys Glu Cys Asp Gly Thr Pro Ile Lys Glu Asp Thr Leu Ile Asp
1940 1945 1950

Lys Leu Asn Glu Asn Ser Thr Pro Glu Lys Thr Asp Met Thr Pro Ser
1955 1960 1965

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1985 1990 1995 2000

Arg Glu Ser Lys Lys
2005

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20 25 30

Lys Ala Lys Arg Pro Lys Gln Glu Arg Lys Asp Glu Asp Asp Glu Asn
35 40 45

Gly Pro Lys Pro Asn Ser Asp Leu Glu Ala Gly Lys Ser Leu Pro Phe
50 55 60

Ile Tyr Gly Asp Ile Pro Pro Glu Met Val Ser Val Pro Leu Glu Asp
65 70 75 80

Leu Asp Pro Tyr Tyr Ile Asn Lys Lys Thr Phe Ile Val Leu Asn Lys
85 90 95

Gly Lys Ala Ile Ser Arg Phe Ser Ala Thr Pro Ala Leu Tyr Ile Leu

100	105	110
Thr Pro Phe Asn Pro Ile Arg Lys Leu Ala Ile Lys Ile Leu Val His		
115	120	125
Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn Cys Val		
130	135	140
Phe Met Thr Met Ser Asn Pro Pro Asp Trp Thr Lys Asn Val Glu Tyr		
145	150	155
Thr Phe Thr Gly Ile Tyr Thr Phe Glu Ser Leu Ile Lys Ile Leu Ala		
165	170	175
Arg Gly Phe Cys Leu Glu Asp Phe Thr Phe Leu Arg Asp Pro Trp Asn		
180	185	190
Trp Leu Asp Phe Thr Val Ile Thr Phe Ala Tyr Val Thr Glu Phe Val		
195	200	205
Asn Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu Arg Ala		
210	215	220
Leu Lys Thr Ile Ser Val Ile Pro Gly Leu Lys Thr Ile Val Gly Ala		
225	230	235
Leu Ile Gln Ser Val Lys Lys Leu Ser Asp Val Met Ile Leu Thr Val		
245	250	255
Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe Met Gly		
260	265	270
Asn Leu Arg Asn Lys Cys Leu Gln Trp Pro Pro Asp Asn Ser Ser Phe		
275	280	285
Glu Ile Asn Ile Thr Ser Phe Phe Asn Asn Ser Leu Asp Gly Asn Gly		
290	295	300
Thr Thr Phe Asn Arg Thr Val Ser Ile Phe Asn Trp Asp Glu Tyr Ile		
305	310	315
Glu Asp Lys Ser His Phe Tyr Phe Leu Glu Gly Gln Asn Asp Ala Leu		
325	330	335
Leu Cys Gly Asn Ser Ser Asp Ala Gly Gln Cys Pro Glu Gly Tyr Ile		
340	345	350
Cys Val Lys Ala Gly Arg Asn Pro Asn Tyr Gly Tyr Thr Ser Phe Asp		
355	360	365
Thr Phe Ser Trp Ala Phe Leu Ser Leu Phe Arg Leu Met Thr Gln Asp		
370	375	380
Phe Trp Glu Asn Leu Tyr Gln Leu Thr Leu Arg Ala Ala Gly Lys Thr		
385	390	395
Tyr Met Ile Phe Phe Val Leu Val Ile Phe Leu Gly Ser Phe Tyr Leu		

405	410	415
Ile Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr Glu Glu Gln Asn 420 425 430		
Gln Ala Thr Leu Glu Glu Ala Glu Gln Lys Glu Ala Glu Phe Gln Gln 435 440 445		
Met Leu Glu Gln Leu Lys Lys Gln Gln Glu Glu Ala Gln Ala Ala Ala 450 455 460		
Ala Ala Ala Ser Ala Glu Ser Arg Asp Phe Ser Gly Ala Gly Gly Ile 465 470 475 480		
Gly Val Phe Ser Glu Ser Ser Ser Val Ala Ser Lys Leu Ser Ser Lys 485 490 495		
Ser Glu Lys Glu Leu Lys Asn Arg Arg Lys Lys Lys Lys Gln Lys Glu 500 505 510		
Gln Ser Gly Glu Glu Glu Lys Asn Asp Arg Val Leu Lys Ser Glu Ser 515 520 525		
Glu Asp Ser Ile Arg Arg Lys Gly Phe Arg Phe Ser Leu Glu Gly Ser 530 535 540		
Arg Leu Thr Tyr Glu Lys Arg Phe Ser Ser Pro His Gln Ser Leu Leu 545 550 555 560		
Ser Ile Arg Gly Ser Leu Phe Ser Pro Arg Arg Asn Ser Arg Ala Ser 565 570 575		
Leu Phe Ser Phe Arg Gly Arg Ala Lys Asp Ile Gly Ser Glu Asn Asp 580 585 590		
Phe Ala Asp Asp Glu His Ser Thr Phe Glu Asp Asn Asp Ser Arg Arg 595 600 605		
Asp Ser Leu Phe Val Pro His Arg His Gly Glu Arg Arg His Ser Asn 610 615 620		
Val Ser Gln Ala Ser Arg Ala Ser Arg Val Leu Pro Ile Leu Pro Met 625 630 635 640		
Asn Gly Lys Met His Ser Ala Val Asp Cys Asn Gly Val Val Ser Leu 645 650 655		
Val Gly Gly Pro Ser Thr Leu Thr Ser Ala Gly Gln Leu Leu Pro Glu 660 665 670		
Gly Thr Thr Thr Glu Thr Glu Ile Arg Lys Arg Arg Ser Ser Ser Tyr 675 680 685		
His Val Ser Met Asp Leu Leu Glu Asp Pro Thr Ser Arg Gln Arg Ala 690 695 700		
Met Ser Ile Ala Ser Ile Leu Thr Asn Thr Met Glu Glu Leu Glu Glu		

705	710	715	720
Ser Arg Gln Lys Cys Pro Pro Cys Trp Tyr Lys Phe Ala Asn Met Cys	725	730	735
Leu Ile Trp Asp Cys Cys Lys Pro Trp Leu Lys Val Lys His Leu Val	740	745	750
Asn Leu Val Val Met Asp Pro Phe Val Asp Leu Ala Ile Thr Ile Cys	755	760	765
Ile Val Leu Asn Thr Leu Phe Met Ala Met Glu His Tyr Pro Met Thr	770	775	780
Glu Gln Phe Ser Ser Val Leu Ser Val Gly Asn Leu Val Phe Thr Gly	785	790	795
Ile Phe Thr Ala Glu Met Phe Leu Lys Ile Ile Ala Met Asp Pro Tyr	805	810	815
Tyr Tyr Phe Gln Glu Gly Trp Asn Ile Phe Asp Gly Phe Ile Val Ser	820	825	830
Leu Ser Leu Met Glu Leu Gly Leu Ala Asn Val Glu Gly Leu Ser Val	835	840	845
Leu Arg Ser Phe Arg Leu Leu Arg Val Phe Lys Leu Ala Lys Ser Trp	850	855	860
Pro Thr Leu Asn Met Leu Ile Lys Ile Ile Gly Asn Ser Val Gly Ala	865	870	875
Leu Gly Asn Leu Thr Leu Val Leu Ala Ile Ile Val Phe Ile Phe Ala	885	890	895
Val Val Gly Met Gln Leu Phe Gly Lys Ser Tyr Lys Glu Cys Val Cys	900	905	910
Lys Ile Ser Asn Asp Cys Glu Leu Pro Arg Trp His Met His Asp Phe	915	920	925
Phe His Ser Phe Leu Ile Val Phe Arg Val Leu Cys Gly Glu Trp Ile	930	935	940
Glu Thr Met Trp Asp Cys Met Glu Val Ala Gly Gln Thr Met Cys Leu	945	950	955
Thr Val Phe Met Met Val Met Val Ile Gly Asn Leu Val Val Leu Asn	965	970	975
Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ser Asp Asn Leu Ala	980	985	990
Ala Thr Asp Asp Asp Asn Glu Met Asn Asn Leu Gln Ile Ala Val Gly	995	1000	1005
Arg Met Gln Lys Gly Ile Asp Phe Val Lys Arg Lys Ile Arg Glu Phe			

1010	1015	1020
Ile Gln Lys Ala Phe Val Arg Lys Gln Lys Ala Leu Asp Glu Ile Lys		
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Pro Leu Glu Asp Leu Asn Asn Lys Lys Asp Ser Cys Ile Ser Asn His		
	1045	1050 1055
Thr Thr Ile Glu Ile Gly Lys Asp Leu Asn Tyr Leu Lys Asp Gly Asn		
	1060	1065 1070
Gly Thr Thr Ser Gly Ile Gly Ser Ser Val Glu Lys Tyr Val Val Asp		
	1075	1080 1085
Glu Ser Asp Tyr Met Ser Phe Ile Asn Asn Pro Ser Leu Thr Val Thr		
	1090	1095 1100
Val Pro Ile Ala Val Gly Glu Ser Asp Phe Glu Asn Leu Asn Thr Glu		
	1105	1110 1115 1120
Glu Phe Ser Ser Glu Ser Asp Met Glu Glu Ser Lys Glu Lys Leu Asn		
	1125	1130 1135
Ala Thr Ser Ser Ser Glu Gly Ser Thr Val Asp Ile Gly Ala Pro Ala		
	1140	1145 1150
Glu Gly Glu Gln Pro Glu Val Glu Pro Glu Glu Ser Leu Glu Pro Glu		
	1155	1160 1165
Ala Cys Phe Thr Glu Asp Cys Val Arg Lys Phe Lys Cys Cys Gln Ile		
	1170	1175 1180
Ser Ile Glu Glu Gly Lys Gly Lys Leu Trp Trp Asn Leu Arg Lys Thr		
	1185	1190 1195 1200
Cys Tyr Lys Ile Val Glu His Asn Trp Phe Glu Thr Phe Ile Val Phe		
	1205	1210 1215
Met Ile Leu Leu Ser Ser Gly Ala Leu Ala Phe Glu Asp Ile Tyr Ile		
	1220	1225 1230
Glu Gln Arg Lys Thr Ile Lys Thr Met Leu Glu Tyr Ala Asp Lys Val		
	1235	1240 1245
Phe Thr Tyr Ile Phe Ile Leu Glu Met Leu Leu Lys Trp Val Ala Tyr		
	1250	1255 1260
Gly Phe Gln Val Tyr Phe Thr Asn Ala Trp Cys Trp Leu Asp Phe Leu		
	1265	1270 1275 1280
Ile Val Asp Val Ser Leu Val Ser Leu Thr Ala Asn Ala Leu Gly Tyr		
	1285	1290 1295
Ser Glu Leu Gly Ala Ile Lys Ser Leu Arg Thr Leu Arg Ala Leu Arg		
	1300	1305 1310
Pro Leu Arg Ala Leu Ser Arg Phe Glu Gly Met Arg Ala Val Val Asn		

1315	1320	1325
Ala Leu Leu Gly Ala Ile Pro Ser Ile Met Asn Val Leu Leu Val Cys		
1330	1335	1340
Leu Ile Phe Trp Leu Ile Phe Ser Ile Met Gly Val Asn Leu Phe Ala		
1345	1350	1355 1360
Gly Lys Phe Tyr His Cys Ile Asn Tyr Thr Thr Gly Glu Met Phe Asp		
	1365	1370 1375
Val Ser Val Val Asn Asn Tyr Ser Glu Cys Lys Ala Leu Ile Glu Ser		
	1380	1385 1390
Asn Gln Thr Ala Arg Trp Lys Asn Val Lys Val Asn Phe Asp Asn Val		
	1395	1400 1405
Gly Leu Gly Tyr Leu Ser Leu Leu Gln Val Ala Thr Phe Lys Gly Trp		
	1410	1415 1420
Met Asp Ile Met Tyr Ala Ala Val Asp Ser Arg Asn Val Glu Leu Gln		
	1425	1430 1435 1440
Pro Lys Tyr Glu Asp Asn Leu Tyr Met Tyr Leu Tyr Phe Val Ile Phe		
	1445	1450 1455
Ile Ile Phe Gly Ser Phe Phe Thr Leu Asn Leu Phe Ile Gly Val Ile		
	1460	1465 1470
Ile Asp Asn Phe Asn Gln Gln Lys Lys Lys Phe Gly Gly Gln Asp Ile		
	1475	1480 1485
Phe Met Thr Glu Glu Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu		
	1490	1495 1500
Gly Ser Lys Lys Pro Gln Lys Pro Ile Pro Arg Pro Ala Asn Lys Phe		
	1505	1510 1515 1520
Gln Gly Met Val Phe Asp Phe Val Thr Lys Gln Val Phe Asp Ile Ser		
	1525	1530 1535
Ile Met Ile Leu Ile Cys Leu Asn Met Val Thr Met Met Val Glu Thr		
	1540	1545 1550
Asp Asp Gln Ser Gln Glu Met Thr Asn Ile Leu Tyr Trp Ile Asn Leu		
	1555	1560 1565
Val Phe Ile Val Leu Phe Thr Gly Glu Cys Val Leu Lys Leu Ile Ser		
	1570	1575 1580
Leu Arg Tyr Tyr Tyr Phe Thr Ile Gly Trp Asn Ile Phe Asp Phe Val		
	1585	1590 1595 1600
Val Val Ile Leu Ser Ile Val Gly Met Phe Leu Ala Glu Leu Ile Glu		
	1605	1610 1615
Lys Tyr Phe Val Ser Pro Thr Leu Phe Arg Val Ile Arg Leu Ala Arg		

1620	1625	1630
Ile Gly Arg Ile Leu Arg Leu Ile Lys Gly Ala Lys Gly Ile Arg Thr		
1635	1640	1645
Leu Leu Phe Ala Leu Met Met Ser Leu Pro Ala Leu Phe Asn Ile Gly		
1650	1655	1660
Leu Leu Leu Phe Leu Val Met Phe Ile Tyr Ala Ile Phe Gly Met Ser		
1665	1670	1675
Asn Phe Ala Tyr Val Lys Arg Glu Val Gly Ile Asp Asp Met Phe Asn		
1685	1690	1695
Phe Glu Thr Phe Gly Asn Ser Met Ile Cys Leu Phe Gln Ile Thr Thr		
1700	1705	1710
Ser Ala Gly Trp Asp Gly Leu Leu Ala Pro Ile Leu Asn Ser Gly Pro		
1715	1720	1725
Pro Asp Cys Asp Pro Asp Lys Asp His Pro Gly Ser Ser Val Lys Gly		
1730	1735	1740
Asp Cys Gly Asn Pro Ser Val Gly Ile Phe Phe Phe Val Ser Tyr Ile		
1745	1750	1755
Ile Ile Ser Phe Leu Val Val Val Asn Met Tyr Ile Ala Val Ile Leu		
1765	1770	1775
Glu Asn Phe Ser Val Ala Thr Glu Glu Ser Ala Glu Pro Leu Ser Glu		
1780	1785	1790
Asp Asp Phe Glu Met Phe Tyr Glu Val Trp Glu Lys Phe Asp Pro Asp		
1795	1800	1805
Ala Thr Gln Phe Ile Glu Phe Ala Lys Leu Ser Asp Phe Ala Asp Ala		
1810	1815	1820
Leu Asp Pro Pro Leu Leu Ile Ala Lys Pro Asn Lys Val Gln Leu Ile		
1825	1830	1835
Ala Met Asp Leu Pro Met Val Ser Gly Asp Arg Ile His Cys Leu Asp		
1845	1850	1855
Ile Leu Phe Ala Phe Thr Lys Arg Val Leu Gly Glu Ser Gly Glu Met		
1860	1865	1870
Asp Ala Leu Arg Ile Gln Met Glu Glu Arg Phe Met Ala Ser Asn Pro		
1875	1880	1885
Ser Lys Val Ser Tyr Glu Pro Ile Thr Thr Thr Leu Lys Arg Lys Gln		
1890	1895	1900
Glu Glu Val Ser Ala Ile Ile Ile Gln Arg Ala Tyr Arg Arg Tyr Leu		
1905	1910	1915
Leu Lys Gln Lys Val Lys Lys Val Ser Ser Ile Tyr Lys Lys Asp Lys		

1925

1930

1935

Gly Lys Glu Cys Asp Gly Thr Pro Ile Lys Glu Asp Thr Leu Ile Asp
1940 1945 1950

Lys Leu Asn Glu Asn Ser Thr Pro Glu Lys Thr Asp Met Thr Pro Ser
1955 1960 1965

Thr Thr Ser Pro Pro Ser Tyr Asp Ser Val Thr Lys Pro Glu Lys Glu
1970 1975 1980

Lys Phe Glu Lys Asp Lys Ser Glu Lys Glu Asp Lys Gly Lys Asp Ile
1985 1990 1995 2000

Arg Glu Ser Lys Lys
2005

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aaaagcctgt ggaagatcag ttccacaact gagagctttg ggctgcttca gacatatgtc 180
tgtgtgtacg ctgtgaagggt gtttctcttc acagttcccc gccctctagt ggtagttaca 240
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aaaaaagatt tttttttttt taaagcatga tggaatttta gctgcagtct tcttggggcc 420
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ctattagaga atccaggcat ggcagtttcc tccccagtg tgcaaggacc atcttcatgc 660
ctatgtctgt cgctaggcat gagggctctc aggaatgggt gaaaaaaatg agggatgttt 720
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caaggatgag gatgatgaaa atggcccaaa gccaaacagt gacttggaag cagsaaaatc 300
tcttccattt atttatggag acattcctcc agagatgggt tcagtgcctc tggaggatct 360
ggacccctac tatatcaata agaaagttag ttcttagtca agttgccttc actgcctatt 420
tactaattgg ttctgggcta gtcccaggga tgatggtgaa gaaggctggc ctccttccct 480
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aggcatcctc cagcgcgga attaaggaag gacaaaagcc tattcacctt cttgaatata 660
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tggtatacac tattttacag ggcaatatat ataaataatg gttttacttt tctcttaaaa 180
tattcttaat atatatctta agttttgttt tatgtgtgtg gttttctttt tcagacgttt 240
atagtattga ataaagggaa agcaatctct cgattcagtg ccaccctgc cctttacatt 300
ttaactccct tcaaccctat tagaaaatta gctattaaga ttttggtaaa ttcataatct 360
ttttcaaact gtcacttaat atgattttct tctttgacca agttattgag ctacacattt 420
tccaaaatat ctgtggttgg caatgttatg tgttctttct ttttctttcc ttttactcaa 480
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<212> DNA
<213> Homo sapiens

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atagtaagca cttaaagtttt aaacttcatg gtggtgaagg catggtagtg cataaaagta 180
agatttttcc attgaaacttt gtcttccttg acgatattct actttattca atatgctcat 240
tatgtgcacg attcttacca actgtgtatt tatgaccatg agtaaccctc cagactggac 300
aaagaatgtg gagtaagtat aaatattttt caatattgac ctccctttat gtttcatatt 360
gtgcttttaa caccttgaga cctcctcaat ttctttaaca aatcatgcta gctactgtta 420
accagaccct gattcaaatt catttctgtc actaaatgtc ttctaggaca aagctttagt 480
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<210> 41
<211> 370
<212> DNA
<213> Homo sapiens

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<400> 41
taagatatgt acttgtaaat taaccactag atttttaatg tgagcttggc tattgtctct 60
caggtatacc tttacaggaa tttatacttt tgaatcactt attaaaatac ttgcaagggg 120
cttttgttta gaagatttca catttttacg ggatccatgg aattggttgg atttcacagt 180
cattactttt gcgtaagtat cttatacat tttctatcct ggaagagtaa atcactgggtg 240
ggagcctata ctatattttc cttggtggct tgccttgaca gaccaagcat ttntcttagt 300
aatcatagtt ttcttccaat caaattatcc agtttgaga aattaggaac tatcatagta 360
aattacatgg

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<210> 42

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<211> 370
<212> DNA
<213> Homo sapiens

<400> 42
caattagcac tgtaaagtaa taaagtttcc caaataacag agattatgat tgatgacaat 60
gccattttcc tcttaattgg gaaagctgat ggcgacactc atgaaattaa aaaggtcttg 120
atgaaagacc aangaagacg tagattttcc taaattctga ataactctga ttttaattcta 180
caggtatgta acagaatttg taaacctagg caatgtttca gctcttcgaa ctttcagagt 240
cttgagagct ttgaaaacta tttctgtaat tccaggtaag aagaaaatgg tataagggtgg 300
taggcccctt atatctccaa ctgtttcttg tgttctgtca ttgtgtttgt gtgtgaaccc 360
cctattacag 370

<210> 43
<211> 410
<212> DNA
<213> Homo sapiens

<400> 43
gtaagaagaa aatggtataa ggtggttaggc cccttatatc tccaactggt tcttgtgttc 60
tgtcattgtg tttgtgtgtg aaccccctat tacagatatg tgacagagtt tgtggacctg 120
ggcaatgtct cagcgttgag aacattcaga gttctccgag cattgaaaac aatttcagtc 180
attccagggtg agagctagggt taaacaccga ggctgacttt agctacagtg gtgctacaat 240
cacagctttt gtgcagaagc cttgttgcta gttgcatatt gcaaataaat atgtaaaaaa 300
gcaagaattg gtacatcatt ttttggtagg atttgattct ttgcttttta cccgttgctt 360
tctttaaacc tattctaaat cagcctttga gtttaacaag tgttgcatga 410

<210> 44
<211> 1066
<212> DNA
<213> Homo sapiens

<400> 44
aaagagtgtt tggaataaca catttggttc atttccattc acagttttct aatgaacata 60
caagttctgc tttcattcat tttcaccagc tagtaggctt ttcattgaaa tggtattcaa 120
tcacaaacat taaactaata ttgttggcat tctgcatgac atttttattt tccaggccaa 180
gctcatgata tttttgccgg taaaatagct gttgagtagt atattttaant tcccccttct 240
gattttgttt gtaggcctga agaccattgt gggggccctg atccagtcag tgaagaagct 300
ttctgatgtc atgatcttga ctgtgttctg tctaagcgtg tttgctgtaa taggattgca 360
gttgttcatg ggcaacctac gaaataaatg tttgcaatgg cctccagata attcttcctt 420
tgaaataaat atcacttcct tctttaacaa ttcattggat gggaatggta ctactttcaa 480
taggacagtg agcatattta actgggatga atatatgag gataaaagta agatatactc 540
tataaaccat taagttgttt agttctctaa atattaaata ttatatataa tggaaattat 600
ctcaatttag atgtgaatca agtgacttag actaatttaa gatgatttaa tacatataaa 660
agagatatca aaggatacct tattctattt ttsttatctg tccattgata tagtaaaagt 720
tctcatttga aaatgtgttg tcttatactc atgttgaaa taatttcata ttatgccata 780
ttaaaaaagg tttatttggt agacattaat cagggttttc agtcatttta ataaataagt 840
cagtagtttg aactattcmg cgtattccac tgaaatgtcg ttaagaagac tgaggggaaa 900
taatttggcc ctatttggtt gatgcaacat atgtattgag tacatatgct atatctgaaa 960
ctagagaaac catthtatcaa gatgaaataa gaatttgtgt gtccttcaga aggttaagta 1020
accctgattt agccattcac ttcattccata ttctaattag tccctt 1066

<210> 45
<211> 385

<212> DNA
<213> Homo sapiens

<400> 45
gttcaattat tgtgaaaaat cttcttttagc catatatatt tattagttta tccatctcat 60
tatgattgaa aacattttgtg agcttttgcca cctaaacagg gtggctgaag tgttttacag 120
gatttttaag attcttttcta ttcctttctc tttaaatagg tcacttttat tttttacagg 180
ggcaaaatga tgctctgctt tgtggcaaca gctcagatgc agggtaagtg tatgcttcct 240
actgagtttc agtccacact gctccatcag tgtcaataac ctgccacctc ccactcatcc 300
agtcccacca ctctctactc aaaaccctcc ataaattcta cttcacggtg actctcagaa 360
tgaccaggat aagtgtagat tctca 385

<210> 46
<211> 430
<212> DNA
<213> Homo sapiens

<400> 46
tataataatg acaattatga atcacagagg aatccacaaa gtagacctta tagattctgt 60
cattatataa atcagtccac ttagtgctga gtttaagtact gggtaagggtg agagaaatcg 120
gcttttttct agtgccctgta taaaacagac attggcatat attaaaacag gaaaaccaat 180
tagcagactt gccgtttattg actycctctc tttcctctaa cctaattaca gccagtgtcc 240
tgaaggatac atctgtgtga aggtctggtag aaaccccaac tatggctaca cgagctttga 300
caccttttagt tgggcctttt tgtccttatt tctgtctcatg actcaagact tctgggaaaa 360
cctttatcaa ctgggtgagaa cagataaaat catttttctg agaatcataa aacaccgaac 420
tcaagagaat 430

<210> 47
<211> 646
<212> DNA
<213> Homo sapiens

<400> 47
tgctgtagaa tattttatta cttagagtgt aagtttgtaa catcctatat aaaatttatt 60
aaaatctctc ttccattttg cagacactac gtgctgctgg gaaaacgtac atgatatttt 120
ttgtgctggt cattttcttg ggctcattct atctaataaa tttgatcttg gctgtgggtg 180
ccatggccta tgaggaacag aatcaggcca cattggaaga ggctgaacag aaggaagctg 240
aatttcagca gatgctcgaa cagttgaaaa agcaacaaga agaagctcag gtatagtga 300
caagcatatg gtcctttgtt tttctgtatc taaattcttt aacctaaatg ttgaggtcag 360
tggcaaggta gttgacatta gaaataggtc atatgtgttt ggtaagtgtc aggagcctgt 420
ttggttatta agaagttatt actttattgc aatgatctct gtcaatagtg tcaatagtaa 480
tggcatcaaa aaatggataa ttataattgc tttactgaca tttttttctc ccttgtgact 540
ccttgaggaa attaatgatt aacaaaggcc tcatgtactc aaacttgag agtagataaa 600
cctacatgtc ctcaagttgaa gtattttctt aggggaagag gaattc 646

<210> 48
<211> 711
<212> DNA
<213> Homo sapiens

<400> 48
tatgtatcat cttccatag aatgcgcatt ttactctttg attggtctaa taacagtgtg 60
ctgtgttcta aaacacagaa taaaatggag aattgttttt caagattatc ttcatgatat 120
tgaagctcaa ttaagcagta acatgataat tattttttta gatnatatgc aacttccac 180

atacttttgcg	cccttctagg	cggcagctgc	agccgcatct	gctgaatcaa	gagacttcag	240
tggtgctggg	gggataggag	ttttttcaga	gagttcttca	gtagcatcta	agttgagctc	300
caaaagtga	aaagagctga	aaaacagaag	aaagaaaaag	aaacagaaag	aacagtctgg	360
agaagaagag	aaaaatgaca	gagtcctaaa	atcggaatct	gaagacagca	taagaagaaa	420
aggtttccgt	ttttccttgg	aaggaagtag	gctgacatat	gaaaagagat	tttcttctcc	480
acaccaggta	aaaatattaa	attacatgaa	ttgtgttctc	ataaattttt	taaaagaata	540
tgccagaatt	taatggagag	aaaaccgcct	tccacctgga	tggcacaatg	ctttcagagt	600
agtgatgatt	atcaagtgtt	ttggctatca	cttcagagaa	tttgtgagtt	ttgcaacttt	660
ttggaatccc	aggaaggaaa	ttttagatcc	ctctgggttt	ggaaaaattt	g	711

<210> 49
 <211> 1026
 <212> DNA
 <213> Homo sapiens

<400> 49						
ttatggggac	acttctgact	atgttgaggt	gtgggtaaag	taggagaaaa	gagagcagaa	60
gatggaaaaat	ggaggaagga	gaaaaagcga	gagtgaata	gaaaagggtga	accttgtaga	120
aatgtccaaa	atgccaccag	cagtcatcag	aggggtgctt	tcttccacat	gtccaatgac	180
ttatccttga	gtaagtcaat	gactatgaca	caatgaatca	aattctgttt	ttcagaatgc	240
cagctcttaa	ctctcttcat	ctcatttttg	tttcttttct	tgttattcat	agtccttact	300
gagcatccgt	ggctcccttt	tctctccaag	acgcaacagt	agggcgagcc	ttttcagctt	360
cagaggtcga	gcaaaggaca	ttggctctga	gaatgacttt	gctgatgatg	agcacagcac	420
ctttgaggac	aatgacagcc	gaagagactc	tctgttcgtg	ccgcacagac	atggagaacg	480
gcgccacagc	aatgtcagcc	aggccagccg	tgcttccagg	gtgctcccca	tcctgccccat	540
gaatgggaag	atgcatagcg	ctgtggactg	caatgggtgtg	gtctccctgg	tcggggggccc	600
ttctaccctc	acatctgctg	ggcagctcct	accagaggtg	aggccaacyy	magattgcag	660
ctgatgtgaa	gagagttgtg	actggtgcag	gcaggagtgy	ttttccattt	mcacatctaa	720
gaatttkttg	agtttsttgc	ccaaaggctg	ggagtttgtt	caatcaagct	gttaactgtc	780
ttgtgaaact	sttctattca	gacttitycta	caaagtaatt	aaaaacctag	gttggtgtgc	840
agagaataata	attagamgtm	atctttcatc	ayyattacta	tggtatgaaa	ctcgccaaaa	900
agcaaagcaa	caatttatca	agcataatgt	tygaytaata	tagttaaatt	aaatccaagg	960
aaattaatgc	tcacaaatta	aataaatact	taaggatttt	gtgattgttg	ttcatttaaa	1020
aggaga						1026

<210> 50
 <211> 601
 <212> DNA
 <213> Homo sapiens

<400> 50						
ataggaaagc	ccaccttgac	aaaccaggg	ctccccaaaa	gctgaaaatc	tgacagactt	60
taaacaaccc	ccaaataaatt	atcattccaa	caatatctta	gtgagctttt	tacatctgag	120
aaagcatggg	gtatattttag	ttaaataaca	cctgtttag	gaatgctttg	ggctttgctg	180
ctttcaaaaa	tagtggttat	ttcatctgaa	attctacttc	tagggcacia	ctactgaaac	240
agaaataaga	aagagacggg	ccagttctta	tcatgtttcc	atggatttat	tggaagatcc	300
tacatcaagg	caaagagcaa	tgagtatagc	cagtattttg	accaacacca	tggaagggtat	360
gttaaaagtc	ctgcgtcaca	gttacttggt	gctttcctaa	tgatgaaaaa	cacttcataa	420
atttcaataa	aatacttcct	gacttgatat	tgtatcatta	ttacacattt	tactaaataa	480
cagtaaaatc	cgtgcataac	tcatggattc	atatattcca	cagatttttt	ttttttatat	540
ttagcctgta	gaaagctgct	gcaaatgtaa	ggatatattg	aacaccactt	tcataactta	600
a						601

<210> 51

<211> 645
<212> DNA
<213> Homo sapiens

<400> 51
gcttactagc ctttctgtac tgatcctttc tatgacagca aaccattgtt aaaattttcc 60
ctgttctctcc agcagattaa cccataatat cttttaacaa ctttagattt tttaaattcc 120
ttttaattta aaccaaactc gcttaataga aagtaagcag ttttcatgag gattctaact 180
ttttttcttc cagaacttga agaatccaga cagaaatgcc caccatgctg gtataaattt 240
gctaatatgt gtttgatttg ggactgttgt aaacatggt taaagggtgaa acacctgtgc 300
aacctgggtg taatggaccc atttgttgac ctggccatca ccatctgcat tgtcttaaatt 360
acactcttca tggctatgga gcactatccc atgacggagc agttcagcag tgtactgtct 420
gttggaacc tggtaagcct cactgagagt ttctcttctt cttgaaagag tttataattg 480
ccttagtgaa tttacatat tgctctcaaa ttaaataatca actaattggc catgtatatc 540
ttgacatcaa atgttttagca tcccttttaa ataacaaaaa aatgttgcta ccatagtgc 600
aaagagtcaa agaatttatg tacaatttga tttagaattg aattt 645

<210> 52
<211> 485
<212> DNA
<213> Homo sapiens

<400> 52
tggcccaaac caatttttaa atcaggaatt taatttwtat attgttgga gttaaattaa 60
gttgctcaat aattattcgt gtttcaakas tatttgctca tataatgaac tacacttctc 120
atntaggtct tcacagggat cttcacagca gaaatgttct tcaagataat tgccatggat 180
ccatattatt actttcaaga aggctggaat atttttgatg gttttattgt gagccttagt 240
ttaatggaac ttggtttggc aaatgtggaa ggattgtcag ttctccgatc attccggctg 300
gtaaattaac tgggagtgtt cataaaatgt actttrtaat taattagtct tcattctcat 360
ctagtaaaaa tggcaagatt tcccatcatt ataataatatt tgaatacctt ctaaacacaga 420
ttggaattgcc ataccaccaa atggtagttt cttcttcac atagctttaa taaagttcac 480
ttaa 485

<210> 53
<211> 602
<212> DNA
<213> Homo sapiens

<400> 53
acagatttcc tctgtgtcc atgtgactaa cccattgtgc acatgtaccc taaaaattag 60
tatataataa taaaataaaa taaaataaaa aataaaaaaa taaaataaaa ataaaattgc 120
agattttttt agaaatgcag agattaacac tgttcttgc tttatttcca gctccgagtt 180
ttcaagtttg caaaatcttg gccaaactta aatatgctaa ttaagatcat tggcaattct 240
gtgggggctc taggaaacct caccttggtt ttggccatca tctgtctcat ttttgctgtg 300
gtcgcatgc agctcttttg taagagctac aaagaatgtg tctgcaagat ttccaatgat 360
tgtgaactcc cacgctggca catgcatgac tttttccact cttcctgat cgtgttccgc 420
gtgctgtgtg gagagtggat agagaccatg tgggactgta tggaggtcgc tggccaaacc 480
atgtgcctta ctgtcttcat gatggtcatg gtgattggaa atctagtgg atgtagcaaa 540
aacattttcc tcattttcat taaaataaat gtaatcatta aaaagtgttc aactgaagaa 600
ta 602

<210> 54
<211> 803
<212> DNA

<213> Homo sapiens

<400> 54

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gtttcatttta gcaatgattt cagtattttc tgcaatgact aataagcaaa tagtgataat 60
agtattattt tatattgacc aagcattttt atttcattca ctttttttca gaatagtgtg 120
tcatgaatta gcagaaatgc atgttagaat aaaataaggt gtcaagaaca atcttagaaa 180
actaatgatg gaaagcaatt gaagcaatag aatgttttga tcacctgttt ttctgtctgt 240
gtttcaggtt ctgaacctct tcttggcctt gcttttgagt tccttcagtt ctgacaatct 300
tgctgccact gatgatgata acgaaatgaa taatctccag attgctgtgg gaaggatgca 360
gaaaggaatc gattttgtta aaagaaaaat acgtgaattt attcagaaag cctttgttag 420
gaagcagaaa gctttagatg aaattaaacc gcttgaagat ctaaataata aaaaagacag 480
ctgtatttcc aaccatacca ccatagaaat aggcaagac ctcaattatc tcaaagacgg 540
aaatggaact actagtggca taggcagcag tgtagaaaaa tatgtcgtgg atgaaagtga 600
ttacatgtca tttataaaca accctagcct cactgtgaca gtaccaattg ctgttgaga 660
atctgacttt gaaaatttaa atactgaaga attcagcagc gagtcagata tggaggaaag 720
caaagaggta aaatgtttaa taaggagata ttttggtgta tataatctgt gttaaatact 780
aggtgtttta tgctgtctc tgt 803
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<210> 55

<211> 615

<212> DNA

<213> Homo sapiens

<400> 55

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atctctatac taggetcaaa cagaagttat ttccgttgtt agcaccatat ttttaaaaga 60
aaaaaaaaata ctatggtgtt gtatctaata ttgtgacccc tgacctttac caaagcggat 120
tggcattatg tttaagttct taattacaga tcaagaaaaa tgcatacaga agatgggggg 180
gggcacacct aattaatttt tatatttaga ttaaagaaaa taattaaatg tgtttttttg 240
tgggattgat tttcagaagc taaatgcaac tagttcatct gaaggcagca cggttgatat 300
tggagctccc gccgagggag aacagcctga ggttgaacct gaggaatccc ttgaacctga 360
agcctgtttt acagaagnnn nnnnnnaagc aaaacaataa catatgtggt cttgagtatc 420
ctcttttcta cccatttttt cctatttatt taaatgtctg tttatttgtc taccatctag 480
ttcatctatc tatctgtatc tatctatcta tctatctatc tagtaatcat ctatacctat 540
ccaacaactg tacatttatt tgtttttttt ttttgcatth gctgttttgaa aaaaaatgca 600
acgtttttaa ggcaa 615
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<210> 56

<211> 400

<212> DNA

<213> Homo sapiens

<400> 56

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gatagctttt gtaagcggaa gctatcttaa aaattaatgt tatttacaat gtattatcag 60
gtaataatgt aaatgaatct cccaccaaca caaatatacc taatcaaaga gtaatttttt 120
gtcttcattt ttttcccaca tatttttagac tgtgtacgga agttcaagtg ttgtcagata 180
agcatagaag aaggcaaagg gaaactctgg tgggaatttg ggaaaacatg ctataagata 240
gtggagcaca attggttcga aaccttcatt gtcttcatga ttctgctgag cagtggggct 300
ctggtagggtg atgcatgatc cactccttca cctttcatct gaaatctttt ccctttccct 360
tcaatcaact catattaccc actttttaa taaggtgttt 400
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<210> 57

<211> 560

<212> DNA

<213> Homo sapiens


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<400> 57
aaattactga aacccttggt tgactgaaat gccagtcag cagtcattta tgatcagata 60
atgataaagt aaaattcagc catgggaaac attaaacctt ccagccttag gcacctgata 120
agagcttgca tcgtttcctt ttttaagaaa tcatcaatta gagactgttt ctgatcataa 180
aatttaatag aattttttga cttacaggcc tttgaagata tatacattga gcagcgaaaa 240
accattaaga ccatggttaga atatgctgac aagggttttca cttacatatt cattctggaa 300
atgctgctaa agtgggttgc atatgggttt caagtgtatt ttaccaatgc ctgggtgctgg 360
ctagacttcc tgattgttga tgtgagtatg ctgcactttg ctgctttatt cattggcata 420
tatgtaatag ttctagcaat ggtgcctgac acagtgtagg cactcagtaa cactgtatca 480
gcccaaatat aaattatgtt tctcatttca cagtgaagagg atgcctcaaa acatttttta 540
ccaatttaaa tacatataca 560

```

```

<210> 58
<211> 480
<212> DNA
<213> Homo sapiens

```

```

<400> 58
aaattcttag gcctttcccc aaacttacta agtcagactc tgctattgggt gtttttaaca 60
agacccttgg gtgattttga aactcatgaa agtccgagaa ttactgattc attgcataga 120
gcaaggctga actgtgtaga cttttttata tgtaataaag aaaattgtgt tgctttttct 180
gtataggtct cactgggttag cttaactgca aatgccttgg gttactcaga acttgggtgcc 240
atcaaatccc tcagaacact aagagctctg aggccactga gagctttgtc ccggtttgaa 300
ggaatgaggg taagactgaa tgccttagag tttgtcagaa ttattattga gagcagactg 360
acactttgta ccatggaaat gtcaaattta tggagaattt gtgtcttaca cattcatact 420
gacatagcta atcaatcaaa aataatattt accagatgcc cataatactt ggcaactgctg 480

```

```

<210> 59
<211> 640
<212> DNA
<213> Homo sapiens

```

```

<400> 59
taattttaaa attcttagtt ggagctacca gagtctagtt tctaccaat attcaacttt 60
gaaacagatt tttttaatca tttgactgtt cttttaataa tgtttaaaaa taagtaaata 120
tttgttgttg gcttttcact ttttttcct tctcatcctg tgccagggtg ttgtaaatgc 180
tcttttagga gccattccat ctatcatgaa tgtacttctg gtttgtctga tcttttggt 240
aatattcagt atcatgggag tgaatctctt tgctggcaag ttttaccatt gtattaatta 300
caccactgga gagatgtttg atgtaagcgt ggtcaacaac tacagtgagt gcaaagctct 360
cattgagagc aatcaaactg ccagggtgaa aatgtgaaa gtaaactttg ataacgtagg 420
acttgatata ctgtctctac ttcaagtagt aagtaatcac tttattattt tccatgatgt 480
gtaattaaaa tgagtctaaa gtttttcttc ctcataatga gatatccacc tgttagaatg 540
gctattatca aacagataaa tgacaataaa tgctggcaag aatgtgaaga aaaggggaacc 600
cttgtagatt gttggcaggg atgtaaatta gtatagcttt 640

```

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<210> 60
<211> 480
<212> DNA
<213> Homo sapiens

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<400> 60
atttgaagta ttttcaatgc atatcgcaaa acattgcccc aaaagtgaat acaaatttca 60
agcttattta tatgcctgta ttgaatacat gtcaaataga attttgatca attattcaat 120

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```

ttatttttcta aaattataat tttgggaaaa aagaaaatga tatgactttt cttacaggcc 180
acgtttaagg gatggatgga tattatgtat gcagctgttg attcacgaaa tgtaagtcta 240
gtagagggga aattgttttag tttgattaaa tgtatatttc tacaatattg taatttagtg 300
atattgtcaa taaaataaaa ttatgtgctt aatttataaa acccatctat attataagga 360
taaaatattt aatcatacta tttctttcaa aattatcata ggatgatttt ctctaatac 420
tctgtatctt ttaacatatc ttttctagta ttttagcaagg cacctgacac aaaactttat 480

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<210> 61
 <211> 366
 <212> DNA
 <213> Homo sapiens

```

<400> 61
taaaacatgc ttagataatt aaaaactcac tgatgtactt tttgtgaaac aagtactaga 60
tataatgggt acaattcttc atattcttta ggtagaatta caacccaagt atgaagacaa 120
cctgtacatg tatctttatt ttgtcatctt tattattttt gggttcattct ttaccttgaa 180
tcttttcatt ggtgtcatca tagataactt caaccaacag aaaaagaaga taagtatatt 240
aaaacttcat ccttgctctg aaatatgaac taaatatatt atactctttc ctttagcctc 300
caaaatgcaa tcaccaaaaa aagaatataa aattcagaaa ttattttgag acatttgata 360
atcgat

```

<210> 62
 <211> 560
 <212> DNA
 <213> Homo sapiens

```

<400> 62
tcgataagct ttttaagcaat taataattca gatagcatgt ttttgatatt tttagtctag 60
aaatatgact aatatggcat aatttatata ttgaataaag gcatctctat aaatacagat 120
attagtaaca atagaatgaa atgtgggagc caattttcac atgattacta aggtggattt 180
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Asn Leu Ile Val Met Asp Pro Phe Val Asp Leu Ala Ile Thr Ile Cys
 705 710 715 720

Ile Val Leu Asn Thr Leu Phe Met Ala Met Glu His Tyr Pro Met Thr
 725 730 735

Glu Gln Phe Ser Ser Val Leu Thr Val Gly Asn Leu Val Phe Thr Gly
 740 745 750

Ile Phe Thr Ala Glu Met Val Leu Lys Ile Ile Ala Met Asp Pro Tyr
 755 760 765

Tyr Tyr Phe Gln Glu Gly Trp Asn Ile Phe Asp Gly Ile Ile Val Ser
 770 775 780

Leu Ser Leu Met Glu Leu Gly Leu Ser Asn Val Glu Gly Leu Ser Val
 785 790 795 800

Leu Arg Ser Phe Arg Leu Leu Arg Val Phe Lys Leu Ala Lys Ser Trp
 805 810 815

Pro Thr Leu Asn Met Leu Ile Lys Ile Ile Gly Asn Ser Val Gly Ala
 820 825 830

Leu Gly Asn Leu Thr Leu Val Leu Ala Ile Ile Val Phe Ile Phe Ala
 835 840 845

Val Val Gly Met Gln Leu Phe Gly Lys Ser Tyr Lys Glu Cys Val Cys
 850 855 860

Lys Ile Asn Asp Asp Cys Thr Leu Pro Arg Trp His Met Asn Asp Phe
 865 870 875 880

Phe His Ser Phe Leu Ile Val Phe Arg Val Leu Cys Gly Glu Trp Ile
 885 890 895

Glu Thr Met Trp Asp Cys Met Glu Val Ala Gly Gln Thr Met Cys Leu
 900 905 910

Ile Val Phe Met Leu Val Met Val Ile Gly Asn Leu Val Val Leu Asn
 915 920 925

Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ser Asp Asn Leu Ala
 930 935 940

Ala Thr Asp Asp Asp Asn Glu Met Asn Asn Leu Gln Ile Ala Val Gly
 945 950 955 960

Arg Met Gln Lys Gly Ile Asp Tyr Val Lys Asn Lys Met Arg Glu Cys
 965 970 975

Phe Gln Lys Ala Phe Phe Arg Lys Pro Lys Val Ile Glu Ile His Glu
 980 985 990

Gly Asn Lys Ile Asp Ser Cys Met Ser Asn Asn Thr Gly Ile Glu Ile
 995 1000 1005

Ser Lys Glu Leu Asn Tyr Leu Arg Asp Gly Asn Gly Thr Thr Ser Gly
 1010 1015 1020

Val Gly Thr Gly Ser Ser Val Glu Lys Tyr Val Ile Asp Glu Asn Asp
 1025 1030 1035 1040

Tyr Met Ser Phe Ile Asn Asn Pro Ser Leu Thr Val Thr Val Pro Ile
 1045 1050 1055

Ala Val Gly Glu Ser Asp Phe Glu Asn Leu Asn Thr Glu Glu Phe Ser
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Ser Glu Ser Glu Leu Glu Glu Ser Lys Glu Lys Leu Asn Ala Thr Ser
 1075 1080 1085

Ser Ser Glu Gly Ser Thr Val Asp Val Val Leu Pro Arg Glu Gly Glu
 1090 1095 1100

Gln Ala Glu Thr Glu Pro Glu Glu Asp Leu Lys Pro Glu Ala Cys Phe
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Thr Glu Gly Cys Ile Lys Lys Phe Pro Phe Cys Gln Val Ser Thr Glu
 1125 1130 1135

Glu Gly Lys Gly Lys Ile Trp Trp Asn Leu Arg Lys Thr Cys Tyr Ser
 1140 1145 1150

Ile Val Glu His Asn Trp Phe Glu Thr Phe Ile Val Phe Met Ile Leu
 1155 1160 1165

Leu Ser Ser Gly Ala Leu Ala Phe Glu Asp Ile Tyr Ile Glu Gln Arg
 1170 1175 1180

Lys Thr Ile Lys Thr Met Leu Glu Tyr Ala Asp Lys Val Phe Thr Tyr
 1185 1190 1195 1200

Ile Phe Ile Leu Glu Met Leu Leu Lys Trp Val Ala Tyr Gly Phe Gln
 1205 1210 1215

Thr Tyr Phe Thr Asn Ala Trp Cys Trp Leu Asp Phe Leu Ile Val Asp
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 1235 1240 1245
 Gly Ala Ile Lys Ser Leu Arg Thr Leu Arg Ala Leu Arg Pro Leu Arg
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 1265 1270 1275 1280
 Gly Ala Ile Pro Ser Ile Met Asn Val Leu Leu Val Cys Leu Ile Phe
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 Tyr His Cys Val Asn Met Thr Thr Gly Asn Met Phe Asp Ile Ser Asp
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 Val Asn Asn Leu Ser Asp Cys Gln Ala Leu Gly Lys Gln Ala Arg Trp
 1330 1335 1340
 Lys Asn Val Lys Val Asn Phe Asp Asn Val Gly Ala Gly Tyr Leu Ala
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 Leu Leu Gln Val Ala Thr Phe Lys Gly Trp Met Asp Ile Met Tyr Ala
 1365 1370 1375
 Ala Val Asp Ser Arg Asp Val Lys Leu Gln Pro Val Tyr Glu Glu Asn
 1380 1385 1390
 Leu Tyr Met Tyr Leu Tyr Phe Val Ile Phe Ile Ile Phe Gly Ser Phe
 1395 1400 1405
 Phe Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe Asn Gln
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 Gln Lys Lys Lys Phe Gly Gly Gln Asp Ile Phe Met Thr Glu Glu Gln
 1425 1430 1435 1440
 Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu Gly Ser Lys Lys Pro Gln
 1445 1450 1455
 Lys Pro Ile Pro Arg Pro Ala Asn Lys Phe Gln Gly Met Val Phe Asp
 1460 1465 1470
 Phe Val Thr Arg Gln Val Phe Asp Ile Ser Ile Met Ile Leu Ile Cys
 1475 1480 1485
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 Met Thr Leu Val Leu Ser Arg Ile Asn Leu Val Phe Ile Val Leu Phe
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Thr Gly Glu Phe Val Leu Lys Leu Val Ser Leu Arg His Tyr Tyr Phe
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Thr Ile Gly Trp Asn Ile Phe Asp Phe Val Val Val Ile Leu Ser Ile
1540 1545 1550

Val Gly Met Phe Leu Ala Glu Met Ile Glu Lys Tyr Phe Val Ser Pro
1555 1560 1565

Thr Leu Phe Arg Val Ile Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg
1570 1575 1580

Leu Ile Lys Gly Ala Lys Gly Ile Arg Thr Leu Leu Phe Ala Leu Met
1585 1590 1595 1600

Met Ser Leu Pro Ala Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val
1605 1610 1615

Met Phe Ile Tyr Ala Ile Phe Gly Met Ser Asn Phe Ala Tyr Val Lys
1620 1625 1630

Lys Glu Ala Gly Ile Asp Asp Met Phe Asn Phe Glu Thr Phe Gly Asn
1635 1640 1645

Ser Met Ile Cys Leu Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp Gly
1650 1655 1660

Leu Leu Ala Pro Ile Leu Asn Ser Ala Pro Pro Asp Cys Asp Pro Asp
1665 1670 1675 1680

Thr Ile His Pro Gly Ser Ser Val Lys Gly Asp Cys Gly Asn Pro Ser
1685 1690 1695

Val Gly Ile Phe Phe Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Val
1700 1705 1710

Val Val Asn Ser Tyr Ile Ala Val Ile Leu Glu Asn Phe Ser Val Ala
1715 1720 1725

Thr Glu Glu Ser Ala Glu Pro Leu Ser Glu Asp Asp Phe Glu Met Phe
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Tyr Glu Val Trp Glu Lys Phe Asp Pro Asp Ala Thr Gln Phe Ile Glu
1745 1750 1755 1760

Phe Ser Lys Leu Ser Asp Phe Ala Ala Ala Leu Asp Pro Pro Leu Leu
1765 1770 1775

Ile Ala Lys Pro Asn Lys Val Gln Leu Ile Ala Met Asp Leu Pro Met
1780 1785 1790

Val Ser Gly Asp Arg Ile His Cys Leu Asp Ile Leu Phe Ala Phe Thr
1795 1800 1805

Lys Arg Val Leu Gly Glu Ser Gly Glu Met Asp Ala Leu Arg Ile Gln
1810 1815 1820

Met Glu Asp Arg Phe Met Ala Ser Asn Pro Ser Lys Val Ser Tyr Glu
1825 1830 1835 1840

Pro Ile Thr Thr Thr Leu Lys Arg Lys Gln Glu Glu Val Ser Ala Ala
1845 1850 1855

Ile Ile Gln Arg Asn Phe Arg Cys Tyr Leu Leu Lys Gln Arg Leu Lys
1860 1865 1870

Asn Ile Ser Ser Asn Tyr Asn Lys Glu Ala Ile Lys Gly Arg Ile Asp
1875 1880 1885

Leu Pro Ile Lys Gln Asp Met Ile Ile Asp Lys Leu Asn Gly Asn Ser
1890 1895 1900

Thr Pro Glu Lys Thr Asp Gly Ser Ser Ser Thr Thr Ser Pro Pro Ser
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1940 1945 1950

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35 40 45

Pro Lys Pro Asn Ser Asp Leu Glu Ala Gly Lys Asn Leu Pro Phe Ile
50 55 60

Tyr Gly Asp Ile Pro Pro Glu Met Val Ser Glu Pro Leu Glu Asp Leu
65 70 75 80

Asp Pro Tyr Tyr Ile Asn Lys Lys Thr Phe Ile Val Met Asn Lys Gly
85 90 95

Lys Ala Ile Ser Arg Phe Ser Ala Thr Ser Ala Leu Tyr Ile Leu Thr
100 105 110

Pro Leu Asn Pro Val Arg Lys Ile Ala Xaa Lys Ile Leu Val His Ser
115 120 125

Leu Phe Ser Met Leu Ile Met Cys Thr Ile Leu Thr Asn Cys Val Phe
130 135 140

Met Thr Leu Ser Asn Pro Pro Asp Trp Thr Lys Asn Val Glu Tyr Thr
 145 150 155 160
 Phe Thr Gly Ile Tyr Thr Phe Glu Ser Leu Ile Lys Ile Leu Ala Arg
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 Gly Phe Cys Leu Glu Asp Phe Thr Phe Leu Arg Asp Pro Trp Asn Trp
 180 185 190
 Leu Asp Phe Ser Val Ile Val Met Ala Tyr Val Thr Glu Phe Val Ser
 195 200 205
 Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu Arg Ala Leu
 210 215 220
 Lys Thr Ile Ser Val Ile Pro Gly Leu Lys Thr Ile Val Gly Ala Leu
 225 230 235 240
 Ile Gln Ser Val Lys Lys Leu Ser Asp Val Met Ile Leu Thr Val Phe
 245 250 255
 Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe Met Gly Asn
 260 265 270
 Leu Arg Asn Lys Cys Leu Gln Trp Pro Pro Ser Asp Ser Ala Phe Glu
 275 280 285
 Thr Asn Thr Thr Ser Tyr Phe Asn Gly Thr Met Asp Ser Asn Gly Thr
 290 295 300
 Phe Val Asn Val Thr Met Ser Thr Phe Asn Trp Lys Asp Tyr Ile Gly
 305 310 315 320
 Asp Asp Ser His Phe Tyr Val Leu Asp Gly Gln Lys Asp Pro Leu Leu
 325 330 335
 Cys Gly Asn Gly Ser Asp Ala Gly Gln Cys Pro Glu Gly Tyr Ile Cys
 340 345 350
 Val Lys Ala Gly Arg Asn Pro Asn Tyr Gly Tyr Thr Ser Phe Asp Thr
 355 360 365
 Phe Ser Trp Ala Phe Leu Ser Leu Phe Arg Leu Met Thr Gln Asp Tyr
 370 375 380
 Trp Glu Asn Leu Tyr Gln Leu Thr Leu Arg Ala Ala Gly Lys Thr Tyr
 385 390 395 400
 Met Ile Phe Phe Val Leu Val Ile Phe Leu Gly Ser Phe Tyr Leu Val
 405 410 415
 Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr Glu Gly Gln Asn Gln
 420 425 430
 Ala Thr Leu Glu Glu Ala Glu Gln Lys Glu Ala Glu Phe Gln Gln Met
 435 440 445

Leu Glu Gln Leu Lys Lys Gln Gln Glu Glu Ala Gln Ala Val Ala Ala
 450 455 460

Ala Ser Ala Ala Ser Arg Asp Phe Ser Gly Ile Gly Gly Leu Gly Glu
 465 470 475 480

Leu Leu Glu Ser Ser Ser Glu Ala Ser Lys Leu Ser Ser Lys Ser Ala
 485 490 495

Lys Glu Trp Arg Asn Arg Arg Lys Lys Arg Arg Gln Arg Glu His Leu
 500 505 510

Glu Gly Asn Asn Lys Gly Glu Arg Asp Ser Phe Pro Lys Ser Glu Ser
 515 520 525

Glu Asp Ser Val Lys Arg Ser Ser Phe Leu Phe Ser Met Asp Gly Asn
 530 535 540

Arg Leu Thr Ser Asp Lys Lys Phe Cys Ser Pro His Gln Ser Leu Leu
 545 550 555 560

Ser Ile Arg Gly Ser Leu Phe Ser Pro Arg Arg Asn Ser Lys Thr Ser
 565 570 575

Ile Phe Ser Phe Arg Gly Arg Ala Lys Asp Val Gly Ser Glu Asn Asp
 580 585 590

Phe Ala Asp Asp Glu His Ser Thr Phe Glu Asp Ser Glu Ser Arg Arg
 595 600 605

Asp Ser Leu Phe Val Pro His Arg His Gly Glu Arg Arg Asn Ser Asn
 610 615 620

Gly Thr Thr Thr Glu Thr Glu Val Arg Lys Arg Arg Leu Ser Ser Tyr
 625 630 635 640

Gln Ile Ser Met Glu Met Leu Glu Asp Ser Ser Gly Arg Gln Arg Ala
 645 650 655

Val Ser Ile Ala Ser Ile Leu Thr Asn Thr Met Glu Glu Leu Glu Glu
 660 665 670

Ser Arg Gln Lys Cys Pro Pro Cys Trp Tyr Arg Phe Ala Asn Val Phe
 675 680 685

Leu Ile Trp Asp Cys Cys Asp Ala Trp Leu Lys Val Lys His Leu Val
 690 695 700

Asn Leu Ile Val Met Asp Pro Phe Val Asp Leu Ala Ile Thr Ile Cys
 705 710 715 720

Ile Val Leu Asn Thr Leu Phe Met Ala Met Glu His Tyr Pro Met Thr
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Glu Gln Phe Ser Ser Val Leu Thr Val Gly Asn Leu Val Phe Thr Gly
 740 745 750

Ile Phe Thr Ala Glu Met Val Leu Lys Ile Ile Ala Met Asp Pro Tyr
 755 760 765
 Tyr Tyr Phe Gln Glu Gly Trp Asn Ile Phe Asp Gly Ile Ile Val Ser
 770 775 780
 Leu Ser Leu Met Glu Leu Gly Leu Ser Asn Val Glu Gly Leu Ser Val
 785 790 795 800
 Leu Arg Ser Phe Arg Leu Leu Arg Val Phe Lys Leu Ala Lys Ser Trp
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 Pro Thr Leu Asn Met Leu Ile Lys Ile Ile Gly Asn Ser Val Gly Ala
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 Val Val Gly Met Gln Leu Phe Gly Lys Ser Tyr Lys Glu Cys Val Cys
 850 855 860
 Lys Ile Asn Asp Asp Cys Thr Leu Pro Arg Trp His Met Asn Asp Phe
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 Phe His Ser Phe Leu Ile Val Phe Arg Val Leu Cys Gly Glu Trp Ile
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 Phe Gln Lys Ala Phe Phe Arg Lys Pro Lys Val Ile Glu Ile His Glu
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 Gly Asn Lys Ile Asp Ser Cys Met Ser Asn Asn Thr Gly Ile Glu Ile
 995 1000 1005
 Ser Lys Glu Leu Asn Tyr Leu Arg Asp Gly Asn Gly Thr Thr Ser Gly
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 Tyr Met Ser Phe Ile Asn Asn Pro Ser Leu Thr Val Thr Val Pro Ile
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Ala Val Gly Glu Ser Asp Phe Glu Asn Leu Asn Thr Glu Glu Phe Ser
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Ser Glu Ser Glu Leu Glu Glu Ser Lys Glu Lys Leu Asn Ala Thr Ser
 1075 1080 1085

Ser Ser Glu Gly Ser Thr Val Asp Val Val Leu Pro Arg Glu Gly Glu
 1090 1095 1100

Gln Ala Glu Thr Glu Pro Glu Glu Asp Leu Lys Pro Glu Ala Cys Phe
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Thr Glu Gly Cys Ile Lys Lys Phe Pro Phe Cys Gln Val Ser Thr Glu
 1125 1130 1135

Glu Gly Lys Gly Lys Ile Trp Trp Asn Leu Arg Lys Thr Cys Tyr Ser
 1140 1145 1150

Ile Val Glu His Asn Trp Phe Glu Thr Phe Ile Val Phe Met Ile Leu
 1155 1160 1165

Leu Ser Ser Gly Ala Leu Ala Phe Glu Asp Ile Tyr Ile Glu Gln Arg
 1170 1175 1180

Lys Thr Ile Lys Thr Met Leu Glu Tyr Ala Asp Lys Val Phe Thr Tyr
 1185 1190 1195 1200

Ile Phe Ile Leu Glu Met Leu Leu Lys Trp Val Ala Tyr Gly Phe Gln
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Thr Tyr Phe Thr Asn Ala Trp Cys Trp Leu Asp Phe Leu Ile Val Asp
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Val Ser Leu Val Ser Leu Val Ala Asn Ala Leu Gly Tyr Ser Glu Leu
 1235 1240 1245

Gly Ala Ile Lys Ser Leu Arg Thr Leu Arg Ala Leu Arg Pro Leu Arg
 1250 1255 1260

Ala Leu Ser Arg Phe Glu Gly Met Arg Val Val Val Asn Ala Leu Val
 1265 1270 1275 1280

Gly Ala Ile Pro Ser Ile Met Asn Val Leu Leu Val Cys Leu Ile Phe
 1285 1290 1295

Trp Leu Ile Phe Ser Ile Met Gly Val Asn Leu Phe Ala Gly Lys Phe
 1300 1305 1310

Tyr His Cys Val Asn Met Thr Thr Gly Asn Met Phe Asp Ile Ser Asp
 1315 1320 1325

Val Asn Asn Leu Ser Asp Cys Gln Ala Leu Gly Lys Gln Ala Arg Trp
 1330 1335 1340

Lys Asn Val Lys Val Asn Phe Asp Asn Val Gly Ala Gly Tyr Leu Ala
 1345 1350 1355 1360

Leu Leu Gln Val Ala Thr Phe Lys Gly Trp Met Asp Ile Met Tyr Ala
 1365 1370 1375

Ala Val Asp Ser Arg Asp Val Lys Leu Gln Pro Val Tyr Glu Glu Asn
 1380 1385 1390

Leu Tyr Met Tyr Leu Tyr Phe Val Ile Phe Ile Ile Phe Gly Ser Phe
 1395 1400 1405

Phe Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe Asn Gln
 1410 1415 1420

Gln Lys Lys Lys Phe Gly Gly Gln Asp Ile Phe Met Thr Glu Glu Gln
 1425 1430 1435 1440

Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu Gly Ser Lys Lys Pro Gln
 1445 1450 1455

Lys Pro Ile Pro Arg Pro Ala Asn Lys Phe Gln Gly Met Val Phe Asp
 1460 1465 1470

Phe Val Thr Arg Gln Val Phe Asp Ile Ser Ile Met Ile Leu Ile Cys
 1475 1480 1485

Leu Asn Met Val Thr Met Met Val Glu Thr Asp Asp Gln Gly Lys Tyr
 1490 1495 1500

Met Thr Leu Val Leu Ser Arg Ile Asn Leu Val Phe Ile Val Leu Phe
 1505 1510 1515 1520

Thr Gly Glu Phe Val Leu Lys Leu Val Ser Leu Arg His Tyr Tyr Phe
 1525 1530 1535

Thr Ile Gly Trp Asn Ile Phe Asp Phe Val Val Val Ile Leu Ser Ile
 1540 1545 1550

Val Gly Met Phe Leu Ala Glu Met Ile Glu Lys Tyr Phe Val Ser Pro
 1555 1560 1565

Thr Leu Phe Arg Val Ile Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg
 1570 1575 1580

Leu Ile Lys Gly Ala Lys Gly Ile Arg Thr Leu Leu Phe Ala Leu Met
 1585 1590 1595 1600

Met Ser Leu Pro Ala Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val
 1605 1610 1615

Met Phe Ile Tyr Ala Ile Phe Gly Met Ser Asn Phe Ala Tyr Val Lys
 1620 1625 1630

Lys Glu Ala Gly Ile Asp Asp Met Phe Asn Phe Glu Thr Phe Gly Asn
 1635 1640 1645

Ser Met Ile Cys Leu Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp Gly
 1650 1655 1660

Leu Leu Ala Pro Ile Leu Asn Ser Ala Pro Pro Asp Cys Asp Pro Asp
 1665 1670 1675 1680

Thr Ile His Pro Gly Ser Ser Val Lys Gly Asp Cys Gly Asn Pro Ser
 1685 1690 1695

Val Gly Ile Phe Phe Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu Val
 1700 1705 1710

Val Val Asn Ser Tyr Ile Ala Val Ile Leu Glu Asn Phe Ser Val Ala
 1715 1720 1725

Thr Glu Glu Ser Ala Glu Pro Leu Ser Glu Asp Asp Phe Glu Met Phe
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Tyr Glu Val Trp Glu Lys Phe Asp Pro Asp Ala Thr Gln Phe Ile Glu
 1745 1750 1755 1760

Phe Ser Lys Leu Ser Asp Phe Ala Ala Ala Leu Asp Pro Pro Leu Leu
 1765 1770 1775

Ile Ala Lys Pro Asn Lys Val Gln Leu Ile Ala Met Asp Leu Pro Met
 1780 1785 1790

Val Ser Gly Asp Arg Ile His Cys Leu Asp Ile Leu Phe Ala Phe Thr
 1795 1800 1805

Lys Arg Val Leu Gly Glu Ser Gly Glu Met Asp Ala Leu Arg Ile Gln
 1810 1815 1820

Met Glu Asp Arg Phe Met Ala Ser Asn Pro Ser Lys Val Ser Tyr Glu
 1825 1830 1835 1840

Pro Ile Thr Thr Thr Leu Lys Arg Lys Gln Glu Glu Val Ser Ala Ala
 1845 1850 1855

Ile Ile Gln Arg Asn Phe Arg Cys Tyr Leu Leu Lys Gln Arg Leu Lys
 1860 1865 1870

Asn Ile Ser Ser Asn Tyr Asn Lys Glu Ala Ile Lys Gly Arg Ile Asp
 1875 1880 1885

Leu Pro Ile Lys Gln Asp Met Ile Ile Asp Lys Leu Asn Gly Asn Ser
 1890 1895 1900

Thr Pro Glu Lys Thr Asp Gly Ser Ser Ser Thr Thr Ser Pro Pro Ser
 1905 1910 1915 1920

Tyr Asp Ser Val Thr Lys Pro Asp Lys Glu Lys Phe Glu Lys Asp Lys
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tgatgtaaga aagagagatt aactcagttt tttttttgtt tttgtttttt tgttgtgtt 780
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<211> 780
<212> DNA
<213> Homo sapiens

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aagtaaaaga gaactgcgaa agaactatga gggattttcca aacagcaaaa ttgtcattga 240
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aaacccta at tctcttgag gggaaaagct gagagtctgg aactagccta tcttccgagg 360
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tcaaattctt tattccagcc cttgataagt aaataagaag gtaaaggact atttatttgt 480
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ctaaaacaaa aaccaaccag gagaatccaa ttaagtaaaa tgtatgtatt aatataaatt 660
agctattccc atctggaaaa gggcagccat ttctgtgttg aggtgcctca atgatactga 720
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<212> DNA

<213> Homo sapiens

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gtgtcagagc ccctggagga cctggatccc tactatatca ataagaaagt gagtattgat 780
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atttttatca caatataata aaacaaacat ttataagaaa tgaagtcaag agttgggttac 960
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<210> 73

<211> 433

<212> DNA

<213> Homo sapiens

<400> 73

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ctccttaaat aagcccatgt ctaatttagt aatttttact gtattttctg tttcagactt 180
ttatagtaat gaataaagga aaggcaattt cccgattcag tgccacctct gccttgata 240
ttttaactcc actaaaccct gtaggaaaa ttgctabsaa gatttttgga cattcatatc 300
cttttaagt gaattgccta aatgctatct ctaacagttg attttaaga aaatgtcagt 360
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<210> 74
<211> 450
<212> DNA
<213> Homo sapiens

<400> 74
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atttataaat ggccatggta acctactaac atttattcct taactataat ctactttatt 180
cagcatgctt atcatgtgca ctattttgac caactgtgta tttatgacct tgagcaaccc 240
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cttctacgag gtaagtattt tcccacaaaa 450

<210> 75
<211> 701
<212> DNA
<213> Homo sapiens

<400> 75
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accagattag attcctaaag aatatatttt ctcttcagtt taactctttg ctcaggcttg 180
taaaactaac taaatgaata gattatttgg taaatagaag taaggaacaa tattttaatg 240
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agaatacata ttagaataca tattgcaatg taaatatatc cagtaaata tcaataaatg 660
gggttatctt catgtcatat agtctttctc ttcacaaaa t 701

<210> 76
<211> 286
<212> DNA
<213> Homo sapiens

<400> 76
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aagcctaggc aatgtttcag cccttcgaac tttcagagtc ttgagagctc tgaaaactat 180
ttctgtaatc ccaggaaga agaaactggg gtaaggtagt aggcccctta tatctccaac 240
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<210> 77/
<211> 515
<212> DNA
<213> Homo sapiens

<400> 77
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taaagtcagc ctttgagttt aacagaaaaat tgcagagac atcttcaaaa aatgctaatt 420
tgggcctctt gcgctctctc tctctctttt tcactaccat ggctttacta acagatttgg 480
attttaccat tcgctgcaga tgtagttcaa aaatg 515

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<210> 78
 <211> 564
 <212> DNA
 <213> Homo sapiens

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<400> 78
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aatggcaciaa tggattcaaa tgggacattt gttaatgtaa caatgagcac atttaactgg 480
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aatgaatttt caactataaa tagt 564

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<210> 79
 <211> 497
 <212> DNA
 <213> Homo sapiens

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<400> 79
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aggtcacttt tatgttttgg atgggcaaaa agacccttta ctctgtggaa atgggttcaga 180
tgcagggtaa gaaacataat atatatTTTT aagatataga actctttgcg aaaaaaaaaa 240
gtaggtagga aaacaactac atgggtatat gtgtagcctt accatgtatg caataaagag 300
cagtgtctgt cccctaggaa gtgccttgct tgccttaccg gattgccact ggtcctaacc 360
tcacagcaat taaaaattat ccctttgtga agacccttcc ccaaaatttc acagttaaga 420
tgttcttaaa ttgatgctcc aatgtgtgaa ggcccagagt ctgtctttgc tgtacatcta 480
tcagagctgt taggaaa 497

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<210> 80
 <211> 501
 <212> DNA
 <213> Homo sapiens

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<400> 80
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tcatctgata agtttcacgg tgggcaatca cctaaagtgt tctggaaatt aaagcaagat 180
aattcgtcac agatagcagc tttgggtttt gaaaattcct ataagtcaaa taaattgaaa 240
ttgctgtaat ttctaaactg accctacctc catttctctc tcttatagcc agtgtccaga 300
aggatacatc tgtgtgaagg ctggtcgaaa cccaactat ggctacacaa gctttgacac 360

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cttttagctgg gctttcctgt ctctatctcg actcatgact caagactact gggaaaatct 420
 ttaccagttg gtaagggtcca aatgagcatg cataacattt atttttatag acatgtatga 480
 aatgaaaagc ataggctgag t 501

<210> 81
 <211> 432
 <212> DNA
 <213> Homo sapiens

<400> 81
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 aacaaaaaga ggcgaattt cagcagatgc tcgaacagct taaaaagcaa caggaagaag 300
 ctcaggtact gagtataaaa mgcaaagatt tatcattatt attmtagtt tctaagtaga 360
 aatagtgtta tactatagag ggtagattgg aactgctttt tcattttata tatmggcatt 420
 gtcattagac ac 432

<210> 82
 <211> 489
 <212> DNA
 <213> Homo sapiens

<400> 82
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 gttggaaagt tcttcagaag catcaaagt gagttccaaa agtgctaaag aatggaggaa 180
 ccgaaggaag aaaagaagac agagagagca ccttgaagga aacaacaaag gagagagaga 240
 cagctttccc aaatccgaat ctgaagacag cgtcaaaaga agcagcttcc ttttctccat 300
 ggatggaaac agactgacca gtgacaaaaa attctgctcc cctcatcagg tatgattttc 360
 tactaagtgc tctggtttct ttgtcattgc tattgctttt tagtttttgt attttgtttt 420
 ggtacacttt tgtactatct gtacttcagt tgagggacag ggaactaaca tttaatatag 480
 ttgtttaaa 489

<210> 83
 <211> 653
 <212> DNA
 <213> Homo sapiens

<400> 83
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 ataaatttga ttatccatgt ttaagggcaa gagtatacta actccaaaga aaacagatcc 180
 tttaatatta atatttatta aataattgctg ttcttcccct acccccatcc cattcctttc 240
 ctttttgctt tctctgcagt ctctcttgag tatccgtggc tccctgtttt cccaagacg 300
 caatagcaaa acaagcattt tcagtttcag aggtcgggca aaggatgttg gatctgaaaa 360
 tgactttgct gatgatgaac acagcacatt tgaagacagc gaaagcagga gagactcact 420
 gtttgtgccc cacagacatg gagagcgacg caacagtaac gttagtcagg ccagtatgtc 480
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 cccagaggtg ataatagatg acctagctgc tactgacatt attcaccaat ttg 653

<210> 84
<211> 566
<212> DNA
<213> Homo sapiens

<400> 84
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tgcaagaaa tgctatgtgg tgttgatatta cttattggga agagtgggtt gagccatcag 180
tatttggttt gcagggcacc accactgaaa cggaagtcag aaagagaagg ttaagctctt 240
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tgattatgtg ctttgtgaac tattccttct tttcatagaa ttactgaagt ctgttaccac 420
gatcgaacta tatattagac ctaagaatgt gatatatggt gtacattatc acattgntta 480
caaaactaat attggcctta ttctttttga cttgggtcct taccttactt gcagagtgat 540
atttcaacac ttgatattat atcaat 566

<210> 85
<211> 748
<212> DNA
<213> Homo sapiens

<400> 85
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aaaaagtcca tctatatgac attttaatta acattttctg aaaatattta atgggattgt 120
cttctcaagt ttcttaagta atatgaactt ctattttcaa atataagcat caattttgtt 180
aaataatgta aaatctacta gcaataataa ctcatTTTTT ttgttattta ctactcttcc 240
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gatttgccaa tgtgttcttg atctgggact gctgtgatgc atgggttaaaa gtaaaacatc 360
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tgactgtagg aaacctggta agtacatttg aagtttactt atttactttg gtagatgtgg 540
gagagataga ccaaagggaa agatgtattt gtgctgtgtt gaacccaaaa attatatacct 600
ctttcctcat agaaagaaat atctaaggaa tattacaggg aatctcagag atacagccta 660
aaactcaact ggtatgaatg ctgattgttt aggccaatgt ctgtgctgat tgatcatggg 720
gtcttaccag ttgtaaactg ctcaaaa 748

<210> 86
<211> 664
<212> DNA
<213> Homo sapiens

<400> 86
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agtgtgatc tctaattttt taggtcttta ctgggatttt tacagcagaa atggttctca 180
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tgogatcatt cagactggta tctatttata tatatccctg tcgctcattg gcacaacatt 360
tattttgaaa ttgaatcaat gtatatttat ataattatta attttaattt taaatttaca 420
tcaatatgtg acattctaag aaaacatgta aacatccyct ttaaagctaa accattttct 480
aagaatgatg aaagcattca aaatactcta taatgattag gtatgtaggg cacattagaa 540
aacctacaag tactttctaa aactgtgttt taagtttatg aagctttttt ggccttacag 600
tctgtaaaga tacgcaata aaaatttaga cccaggttaa ttttagcttt ttattaaccc 660
tact 664

<210> 87
 <211> 750
 <212> DNA
 <213> Homo sapiens

<400> 87
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 ccacgtgtgg ttctatgata ccacatacta ataaaaataat gtctaaaatt atattatgat 180
 tactactaac agcatctttt cacttgatta cagcttagag ttttcaagtt ggcaaaatcc 240
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 aacttctcct gggctctggt ttccccat 750

<210> 88
 <211> 768
 <212> DNA
 <213> Homo sapiens

<400> 88
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 aaaacttaaa tactgaagag ttcagcagtg agtcagaact agaagaaagc aaggaggtaa 660
 ggaatgcttt taaatttttt gttccatttc ctatgataac catgtactac agttatttac 720
 tattttcatt gtgcttatat gcattatcga aaagcaatga ttgtaagt 768

<210> 89
 <211> 471
 <212> DNA
 <213> Homo sapiens

<400> 89
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 gtgggtggct atgcctgtaa ccccaaaatt ttgggaggct acggtaggag gattgcttga 420

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471

<210> 90
<211> 623
<212> DNA
<213> Homo sapiens

<400> 90
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<210> 91
<211> 520
<212> DNA
<213> Homo sapiens

<400> 91
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<210> 92
<211> 595
<212> DNA
<213> Homo sapiens

<400> 92
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agaatagaca ctctaattat tcatgtcaaa aattacatgt aggtaatgat ttagatagaa 540
aagggtgcc a tactcttctg atatttattt caatagaaat tacagaatta gaagc 595

<210> 93
<211> 787
<212> DNA
<213> Homo sapiens

<400> 93
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attattttat aatgtatttt ccttagtggt aagcttttag tatgttttaa tgtgatttta 780
tatttct 787

<210> 94
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<212> DNA
<213> Homo sapiens

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tttcatctgg tttaatgtca ttgttaggtg aaatttttat gaacaattca aatatatgtt 180
atttacaggc cacattttaa ggctggatgg atattatgta tgcagctgtt gattcacgag 240
atgtaagtat cactcaaata ttatttatag gttctagatt tcttatgggtg aatattgggtg 300
gtaattttaa cactgataca tccaaaattc tatattagaa catttaatat tgcatataaa 360
aaatgaacag tctgcttcaa tatagatgat gcttgattaa tgtgtgccta atatacaata 420
tgtagcta atgaaacg 438

<210> 95
<211> 637
<212> DNA
<213> Homo sapiens

<400> 95
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<210> 96
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<212> DNA
<213> Homo sapiens

<400> 96
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ggaaagacaa atattttttg tgaaagtact attggaacac agaattgtaa ccagttttat 240
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aatacttcca aagcaagggt cactttcctg ctaccaa 637

<210> 97
<211> 759
<212> DNA
<213> Homo sapiens

<400> 97
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cgtatgtgga agggctttat ctacaatttt actgcattat tctttatgaa atatatatag 180
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<210> 98
<211> 3975
<212> DNA
<213> Homo sapiens

<400> 98
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<210> 99
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 99
tgtgttctgc cccagtgaga ct

22

<210> 100
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 100
cttcctgctc tgcccaaact gaat

24

<210> 101
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 101
ggcgatgtaa tgtaagggtgc tgtc

24

<210> 102
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
oligonucleotide

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gtgccttcag ttgcaattgt tcag

24

<210> 103
<211> 24
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 103

ttaggaattt catatgcaga ataa

24

<210> 104

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 104

tgggccattt ttcgtcgtc

19

<210> 105

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 105

gaaagacgca ttgcagaaga aaagg

25

<210> 106

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 106

ctattggcat gtgttggtgc taca

24

<210> 107

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
oligonucleotide

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25

<210> 108
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<212> DNA
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<220>
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oligonucleotide

<400> 108
ttcccaactt aatttgatat ttagc

25

<210> 109
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oligonucleotide

<400> 109
gcagtttggg cttttcaatg ttag

24

<210> 110
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<212> DNA
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<220>
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oligonucleotide

<400> 110
gacacagttt caraatcccr aatg

24

<210> 111
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<212> DNA
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oligonucleotide

<400> 111
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24

<210> 112

<211> 24
<212> DNA
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<220>

<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 112
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24

<210> 113
<211> 24
<212> DNA
<213> Artificial Sequence

<220>

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oligonucleotide

<400> 113
agcccatgca gtaatataaa tcct

24

<210> 114
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<220>

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oligonucleotide

<400> 114
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24

<210> 115
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<220>

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oligonucleotide

<400> 115
ctgtggcctg cctgagcgta tt

22

<210> 116
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oligonucleotide

<400> 116
ccaattctac tttttaagga aatg

24

<210> 117
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<212> DNA
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<220>
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oligonucleotide

<400> 117
aaatacttgt gcctttgaa

19

<210> 118
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<212> DNA
<213> Artificial Sequence

<220>
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oligonucleotide

<400> 118
gtacatacaa tatacacaga tgc

23

<210> 119
<211> 23
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 119
aggcagcaga acgacttgta ata

23

<210> 120
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
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oligonucleotide

<400> 120
atccggtttt aatttcataa ctca

24

<210> 121
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<213> Artificial Sequence

<220>
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oligonucleotide

<400> 121
gttgagcacc cttagtgaat aata

24

<210> 122
<211> 24
<212> DNA
<213> Artificial Sequence

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oligonucleotide

<400> 122
tcacacgctc tagactactt ctct

24

<210> 123
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<213> Artificial Sequence

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oligonucleotide

<400> 123
tgcaaatact tcagcccttt caaa

24

<210> 124
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oligonucleotide

<400> 124
ttccccacca gactgctctt tc

22

<210> 125
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<400> 125

gcagcaggca ggctctca

18

<210> 126

<211> 24

<212> DNA

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<400> 126

tctcccatgt tttaattttc aacc

24

<210> 127

<211> 24

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 127

ataatcttgc aaaatgaaat caca

24

<210> 128

<211> 19

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 128

atccgggatg acctactgg

19

<210> 129

<211> 24

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 129
gataacgaga gccgtagaga ttcc

24

<210> 130
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oligonucleotide

<400> 130
agccagccat gcctgaacta

20

<210> 131
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<212> DNA
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<220>
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oligonucleotide

<400> 131
tgtttgcttg tcatattgct caa

23

<210> 132
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oligonucleotide

<400> 132
tgcactattc ccaactcaca aa

22

<210> 133
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oligonucleotide

<400> 133
aagggtgtct ctgtaacaaa aatg

24

<210> 134
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<212> DNA
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oligonucleotide

<400> 134
gtgatggcca ggtcaacaaa 20

<210> 135
<211> 24
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oligonucleotide

<400> 135
ctgggactgt tctccatatt gggt 24

<210> 136
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oligonucleotide

<400> 136
tttgaggggg ccaggaag 18

<210> 137
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oligonucleotide

<400> 137
cattgtggga aaatagcata agc 23

<210> 138
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 oligonucleotide

<400> 138
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<210> 139
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 oligonucleotide

<400> 139
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<210> 140
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 oligonucleotide

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<210> 141
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 oligonucleotide

<400> 141
 cggcatgcag ctcttttgta 20

<210> 142
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 oligonucleotide

<400> 142

atgtgccatg ctggtgtatt tc

22

<210> 143
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<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 143
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23

<210> 144
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<212> DNA
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<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 144
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23

<210> 145
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<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 145
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<210> 146
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oligonucleotide

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21

<210> 147
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oligonucleotide

<400> 147
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<210> 148
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oligonucleotide

<400> 148
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oligonucleotide

<400> 149
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<210> 150
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oligonucleotide

<400> 150
taagctgcac tccaaatgaa agat 24

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oligonucleotide

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23

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